Exam Chapters 1, 2, 4.1, 5, 6, 7 ↑ trend PreCalc G Packet 1

Name_____

idyear Exam Review chapter 1

ULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use the distance formula to find the distance between the pair of points.

1) (–6, –2) (3, –5)

A) 12 B) $72\sqrt{2}$ C) 72 D) $3\sqrt{10}$

Find the indicated point(s).

2) Find the midpoint of the line segment whose endpoints are (–8, 4) and (–4, 8).

A) (6, – 6) B) (– 6, 6) C) (–4, –4) D) (–12, 12)

Use the graph of the given equation obtained on a graphing utility to approximate the intercepts to two decimal places.

3) $4x^2 - 5y = 68$

A) (0, 13.60), (4.12, 0), (–4.12, 0)

B) (0, –13.59), (4.13, 0), (–4.13, 0)

C) (0, 4.12), (0, –4.12), (–13.60, 0)

D) (0, –13.60), (4.12, 0), (–4.12, 0)

Determine whether the function is symmetric with respect to the y–axis, symmetric with respect to the x–axis, symmetric with respect to the origin, or none of these.

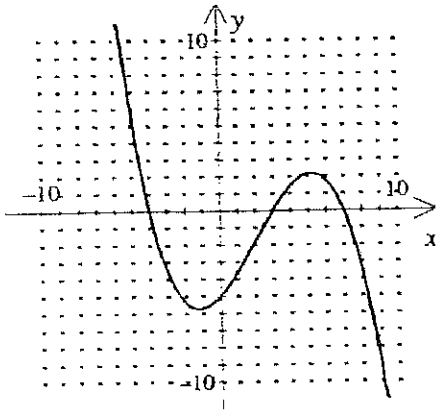
4) $y = -5x^3 + 2x$

A) x–axis only B) origin only C) x–axis, y–axis, origin D) y–axis only

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Give the x– and y–intercepts.

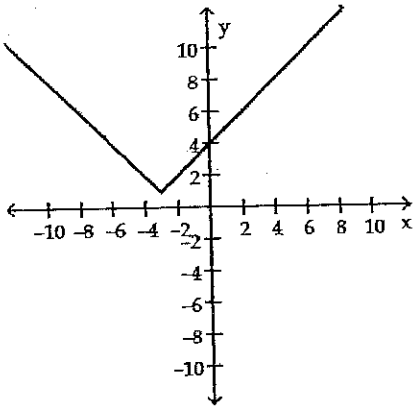
5)



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

List the intercepts of the graph. Tell whether the graph is symmetric with respect to the x-axis, y-axis, origin, or none of these.

6)



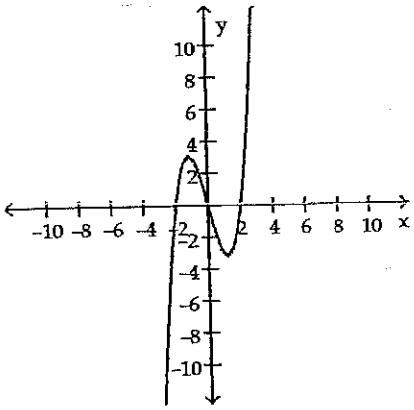
A) (0, 4); symmetric to y-axis

B) (0, 4); symmetric to origin

C) (0, 4); symmetric to x-axis

D) (0, 4); no symmetry

7)



A) (–2, 0), (0, 0), (2, 0); symmetric to y-axis

B) (–2, 0), (0, 0), (2, 0); symmetric to origin

C) (–2, 0), (0, 0), (2, 0); symmetric to x-axis

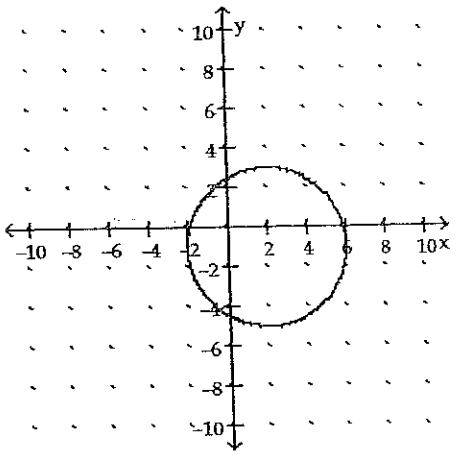
D) (–2, 0), (0, 0), (2, 0); symmetric to origin, x-axis, and y-axis

Write the standard form of the equation for the circle.

8) Give the equation for a circle.
Center at (–7, 0), radius 5

A) $(x-7)^2+y^2=25$ B) $(x+7)^2+y^2=25$ C) $x^2+(y-7)^2=5$ D) $x^2+(y+7)^2=5$

9)



A) $(x+1)^2+(y-2)^2=16$

B) $(x-1)^2+(y+2)^2=16$

C) $(x-2)^2+(y+1)^2=16$

D) $(x+2)^2+(y-1)^2=16$

Solve the equation.

10) $\frac{r+6}{5}=\frac{r+8}{7}$

A) -1 B) -2 C) 2 D) 1

11) $x^2-7x-18=0$

A) $x=-2, x=-9$ B) $x=-2, x=9$ C) $x=2, x=9$ D) $x=2, x=-9$

Use the quadratic formula to solve the equation.

12) $3n^2=-12n-5$

A) $\left\{\frac{-6\pm\sqrt{21}}{6}\right\}$ B) $\left\{\frac{-6\pm\sqrt{21}}{3}\right\}$ C) $\left\{\frac{-12\pm\sqrt{21}}{3}\right\}$ D) $\left\{\frac{-6\pm\sqrt{51}}{3}\right\}$

Solve the equation.

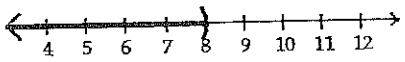
13) $|2m+7|=5$

A) no solution B) $\{-1,-6\}$ C) $\{-\frac{2}{7},-\frac{12}{7}\}$ D) $\{1,6\}$

Write each expression in interval notation. Graph each interval.

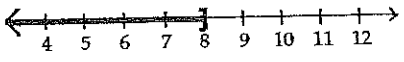
14) $y<8$

A) $(-\infty,8)$



B) $[-\infty,8)$

C) $[-\infty,8]$



D) $(-\infty,8]$

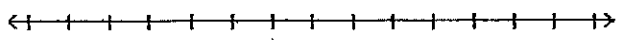
Using the variable x, write each interval as an inequality.

15) $[-3,7)$

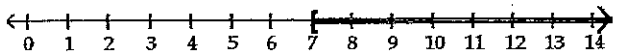
A) $-3\le x\le 7$ B) $-3\le x<7$ C) $x<7$ D) $-3<x\le 7$

Solve the inequality. Graph the solution set.

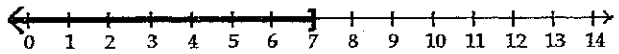
16) $8z - 2 > 7z + 5$



A) $[7, \infty)$

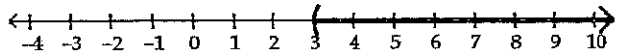


B) $(-\infty, 7]$



C) $(7, \infty)$

D) $(3, \infty)$



Find the slope of the line that goes through the pair of points.

17) (5, –8) and (8, –3)

A) Undefined B) $\frac{5}{3}$ C) $\frac{5}{2}$ D) –11

Write the equation of the line satisfying the given conditions.

18) Find the equation of the line through the point $(-\frac{3}{8}, 7)$ with undefined slope.

A) $x = 7$ B) $x = 0$ C) $x = -\frac{3}{8}$ D) $x = \frac{3}{8}$

Write an equation in point–slope form of the line satisfying the given conditions.

19) The line through the point (–4, 5) and having the slope $\frac{1}{5}$

A) $x + 5 = \frac{1}{5}(y - 4)$ B) $y + 5 = \frac{1}{5}(x - 4)$ C) $y + 4 = \frac{1}{5}(x - 5)$ D) $y - 5 = \frac{1}{5}(x + 4)$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Write the equation of the line satisfying the given conditions.

20) Give the equation of the line that contains (–2, 4), and (–6, 4).

Write the equation in slope–intercept form.

21) Write $6x + 5y = -2$ in slope–intercept form.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the slope and y–intercept of the line.

22) Find the slope m and y–intercept b of the line $6x - 2y = -24$.

A) $m = 3, b = 12$ B) $m = 18, b = \frac{1}{3}$ C) $m = -3, b = -12$ D) $m = -12, b = -\frac{1}{3}$

Write an equation for the line.

23) Through $(-6, 2)$ parallel to $-4x - 5y = 9$

A) $-4x + 5y = 14$ B) $-6x - 5y = 9$ C) $-4x - 5y = 14$ D) $-5x - 4 = 2$

24) Through $(9, 4)$ perpendicular to $5x + 8y = 13$

A) $-8x + 5y = -52$ B) $5x - 8 = 5$ C) $-8x - 5y = -52$ D) $9x - 8y = 13$

Exam

Name_____

Midyear exam review chap 2 and 4.1

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Decide whether the relation defines a function.

1) $\{(-7, 6), (-7, -5), (1, 9), (3, -6), (8, 2)\}$

A) Function B) Not a function

Determine whether the equation is a function.

2) $y = 3x^2 - 3x - 1$

A) No B) Yes

3) $y = \dfrac{3x + 4}{x + 1}$

A) Yes B) No

Evaluate the function.

4) Find $f(a - 4)$ when $f(x) = x^2 - 3$.

A) $a^2 - 8a + 16$ B) $a^2 + 16$ C) $a^2 - 7$ D) $a^2 - 8a + 13$

5) Find $f(0)$ when $f(x) = -6x - 4$.

A) 4 B) -10 C) -4 D) -0

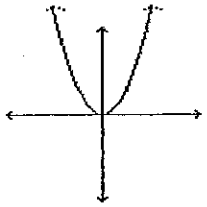
Give the domain of the function.

6) $f(x) = \dfrac{(x + 1)(x - 1)}{x^2 - 1}$

A) $x \neq 1, x \neq -1$ B) $x > 1$ C) $x \neq 1$ D) All real numbers

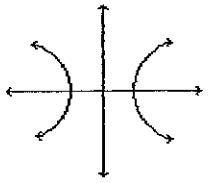
Determine whether or not the graph represents a function.

7)



A) Not a function B) Function

8)



A) Function B) Not a function

Use a graphing utility to find the equation of the line of best fit.

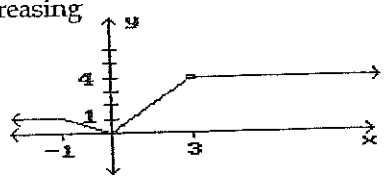
9)

x	6	8	20	28	36
y	2	4	13	20	30

A) $y = 0.95x - 2.79$ B) $y = 0.90x - 3.79$ C) $y = 0.85x - 2.79$ D) $y = 0.80x - 3.79$

Identify the intervals where the function is changing as requested.

10) Decreasing



A) $(-1, 0)$ B) $(0, 3)$ C) $(3, \infty)$ D) $(-\infty, 0)$

Use a graphing utility to graph the function. Find any local maxima or minima.

11) $f(x) = x^3 - 12x + 2$

A) $(0, 0)$

B) $(-2, 18), (0, 0), (2, -14)$

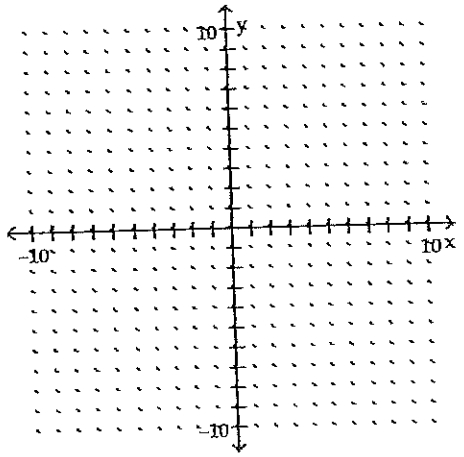
C) $(2, -14), (-2, 18)$

D) None

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Graph the function.

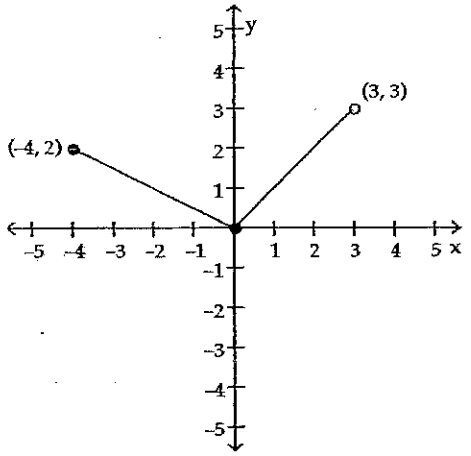
12) Graph the piecewise defined function: $f(x) = \begin{cases} -x + 3 \text{ if } x < 2 \\ 2x - 3 \text{ if } x \geq 2 \end{cases}$



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

The graph of a piecewise-defined function is given. Write a definition for the function.

13)



A) $f(x) = -2x$ if $-4 \le x \le 0$
$f(x) = x$ if $0 \le x < 3$

B) $f(x) = -\frac{1}{2}x$ if $-4 < x < 0$
$f(x) = x$ if $0 < x < 3$

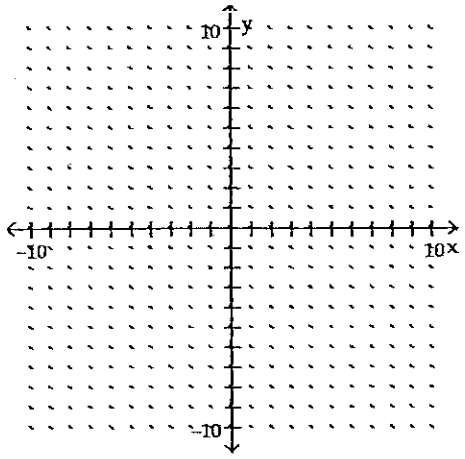
C) $f(x) = \frac{1}{2}x$ if $-4 \le x \le 0$
$f(x) = x$ if $0 \le x < 3$

D) $f(x) = -\frac{1}{2}x$ if $-4 \le x \le 0$
$f(x) = x$ if $0 \le x < 3$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Graph the function.

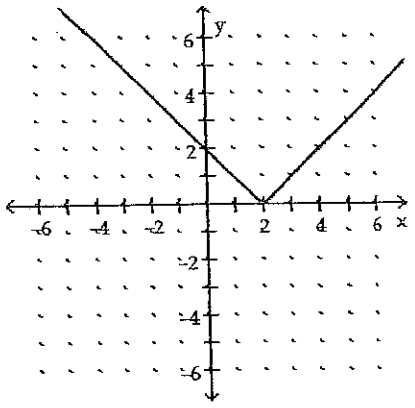
14) Graph: $f(x) = |x + 2| + 2$



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Match the correct function to a given graph.

15)

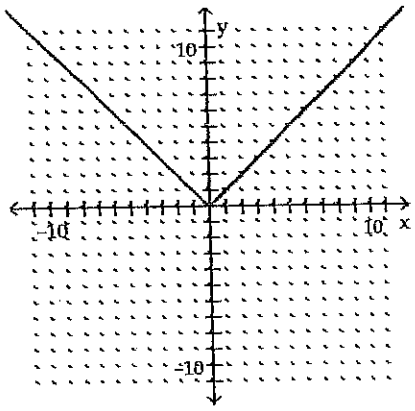


A) f(x) = |1 − x| B) f(x) = |2 − x| C) f(x) = |x + 2| D) f(x) = x − 2

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Graph the function.

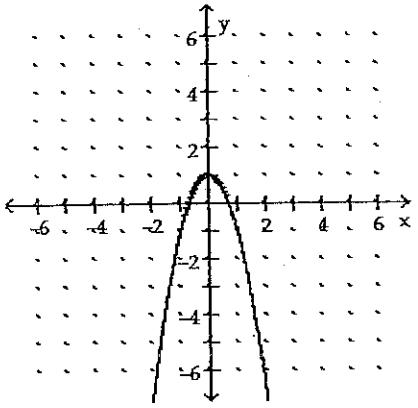
16) The graph of the function $y_1 = |x|$ is shown below. Name and graph the function y_2, which is the reflection of y_1 across the x-axis.



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Match the correct function to a given graph.

17)



A) $f(x) = -2x^2 - 1$ B) $f(x) = 1 - x^2$ C) $f(x) = -2x^2 + 1$ D) $f(x) = -2x^2$

Find the function.

18) Find the function that is finally graphed after the following transformations are applied to the graph of $y = |x|$. The graph is shifted right 3 units, stretched by a factor of 3, shifted vertically down 2 units, and finally reflected across the x-axis.

A) $y = -3|x - 3| - 2$ B) $y = -[3|x + 3| - 2]$ C) $y = -[3|x - 3| - 2]$ D) $y = 3|-x - 3| - 2$

Find the indicated composite for the pair of functions.

19) $(f \circ g)(x)$: $f(x) = \frac{7}{x-6}$, $g(x) = \frac{8}{7x}$

A) $\frac{49x}{8 + 42x}$ B) $\frac{49x}{8 - 42x}$ C) $\frac{7x}{8 - 42x}$ D) $\frac{8x - 48}{49x}$

20) $(f \circ g)(x)$: $f(x) = 7x + 8$, $g(x) = 5x - 1$

A) $35x + 7$ B) $35x + 15$ C) $35x + 1$ D) $35x + 39$

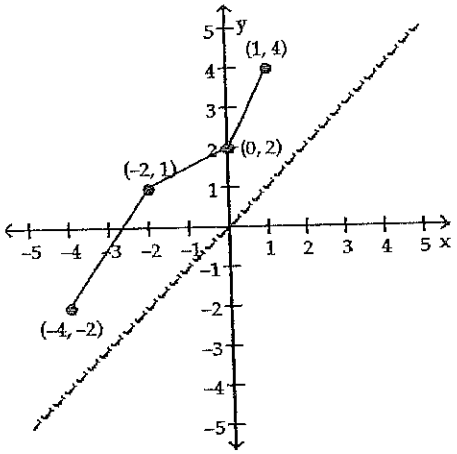
Decide whether or not the functions are inverses of each other.

21) $f(x) = 2x + 7$; $g(x) = \frac{x}{2} - 7$

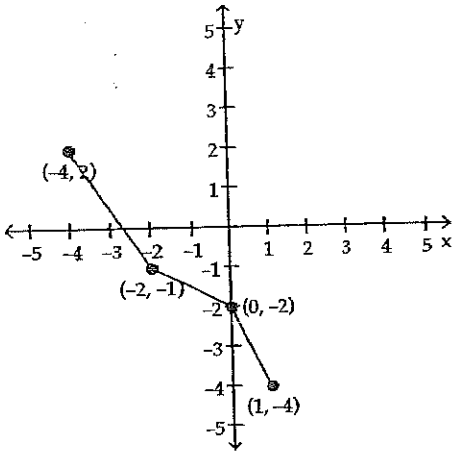
A) Yes B) No

Use the graph of the given one-to-one function to sketch the graph of the inverse function. For convenience, the graph o
$y = x$ is also given.

22)



A)



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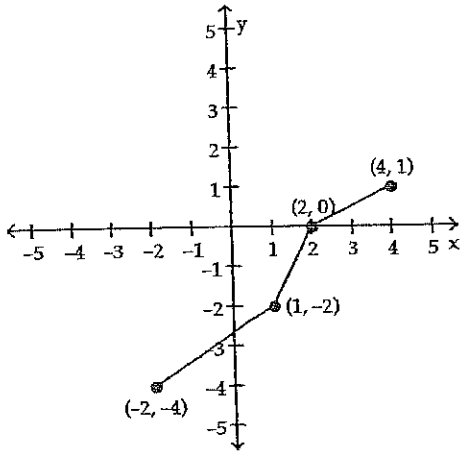

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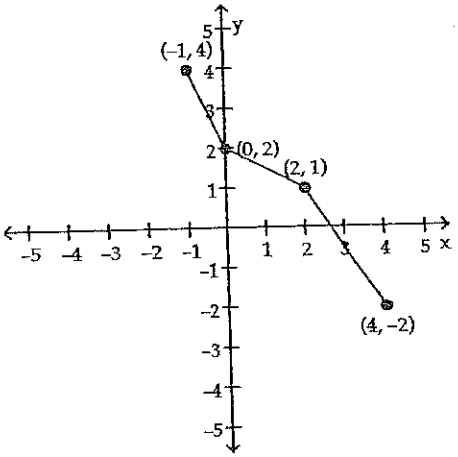

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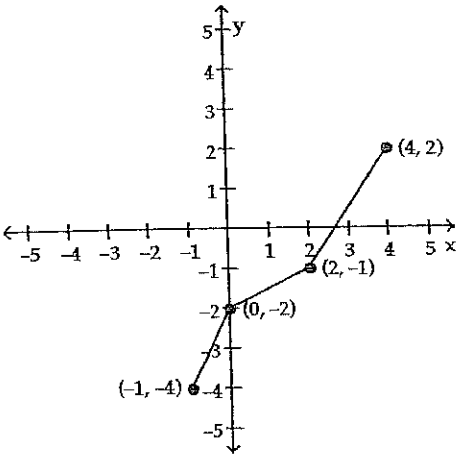


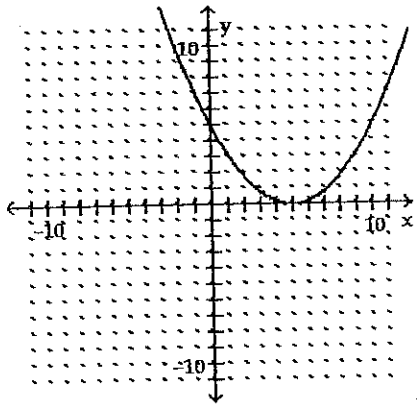
The function f is one-to-one. Find its inverse.

23) $f(x) = 4x + 5$

A) $f^{-1}(x) = \frac{x+5}{4}$ B) $f^{-1}(x) = \frac{x-5}{4}$ C) $f^{-1}(x) = -\frac{x+4}{5}$ D) $f(x) = \frac{x-5}{4}$

Use the horizontal line test to determine if the function is one-to-one.

24)



A) Yes

B) No

Exam

Name_____

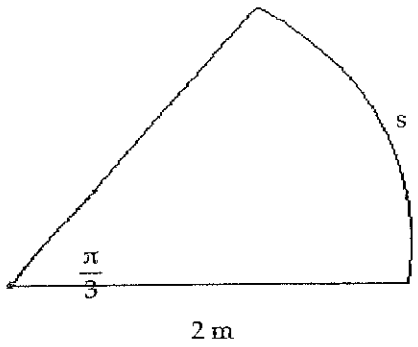
Midyear Review chapter 5

Show all work on lined paper. If the question asks you to give exact answers, do not use your calculator.

ULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

..d the length s. Round answer to three decimal places.

1)



A) 4.712 m B) 4.188 m C) 2.094 m D) 1.91 m

Solve the problem.

2) The minute hand of a clock is 7 inches long. How far does the tip of the minute hand move in 25 minutes? Round your answer to two decimal places.

A) 19.56 inches B) 18.33 inches C) 16.59 inches D) 20.84 inches

If s denotes the length of the arc of a circle of radius r subtended by a central angle θ, find the missing quantity.

3) $r = 14.5$ in, $\theta = 150°$, $s = ?$

A) 38.1 in B) 38.2 in C) 38.0 in D) 38.3 in

..onvert the degree measurement to radians. Express answer as multiple of π.

4) 480°

A) $\frac{7\pi}{2}$ B) $\frac{7}{3}\pi$ C) $\frac{9\pi}{4}$ D) $\frac{8\pi}{3}$

Convert the radian measure to degrees. (Round to the nearest hundredth when necessary)

5) $\frac{\pi}{3}$

A) 1° B) 1.05° C) $60\pi°$ D) 60°

6) $\frac{43}{18}\pi$

A) 8° B) 215° C) $860\pi°$ D) 430°

In the following problems, A denotes the area of a section of a circle of radius r formed by the central angle θ. Find the missing quantity. Use 3.14 as an approximation for π. Round your answers to two decimal places.

7) $r = 13$ feet

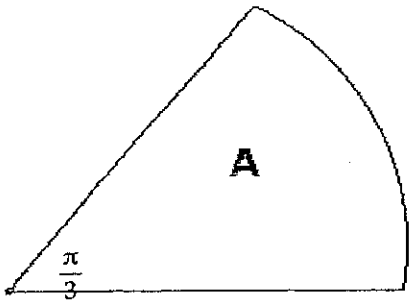
$\theta = ?$

$A = 79$ square feet

A) 0.47 radians B) 6675.5 radians C) 13,351 radians D) 0.93 radians

Find the area A. If necessary, round answer to three decimal places.

8)



9 yds

A) 42.412 square yards B) 27 square yards C) 84.823 square yards D) 4.712 square yards

Solve the problem.

9) A cow is tethered to a post with a rope that is 40 feet long in the corner of a rectangular field of dimensions 70.4 ft by 60.3 ft. Find the area available for the cow to graze. Round answer to two decimal places.

A) 1256.64 ft^2 B) 2513.27 ft^2 C) 1600.00 ft^2 D) 5026.55 ft^2

A point on the terminal side of angle θ is given. Find the exact value of the given trigonometric function.

10) (6, 8); Find cos θ.

A) $\frac{3}{5}$ B) $\frac{4}{3}$ C) $\frac{3}{4}$ D) $\frac{4}{5}$

11) (21, 28); Find csc θ.

A) $\frac{5}{3}$ B) $\frac{4}{3}$ C) $\frac{5}{4}$ D) $\frac{3}{4}$

12) (2, –3); Find sin θ.

A) $\frac{\sqrt{13}}{2}$ B) $\frac{2\sqrt{13}}{13}$ C) –3 D) $-\frac{3\sqrt{13}}{13}$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

13) Use the unit circle to find the exact values of $\sin\frac{3}{2}\pi$ and $\cos\frac{3}{2}\pi$.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

14) Use the unit circle to find the exact values of $\sin\pi$ and $\cos\pi$.

A) $\sin\pi = 0;\ \cos\pi = 1$ B) $\sin\pi = 1;\ \cos\pi = 0$ C) $\sin\pi = -1;\ \cos\pi = 0$ D) $\sin\pi = 0;\ \cos\pi = -1$

Give the exact value.

15) csc 45°

A) $\frac{\sqrt{3}}{2}$ B) $\frac{\sqrt{2}}{2}$ C) $\sqrt{3}$ D) $\sqrt{2}$

Find the exact value of the expression if $\theta = 30°$. Do not use a calculator.

16) $\frac{\sin\theta}{4}$

A) $8\sqrt{3}$ B) 2 C) $\frac{1}{8}$ D) $\frac{\sqrt{3}}{8}$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

17) Find the exact value of $\sin\frac{\pi}{3} - \cos\frac{\pi}{6}$. Do not use a calculator.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the exact value of the expression.

18) $\csc 30° - \cos 30°$

A) $\frac{4\sqrt{3} - 3\sqrt{2}}{6}$ B) $\frac{-\sqrt{3}}{6}$ C) $\frac{4 - \sqrt{3}}{2}$ D) $\frac{4 - \sqrt{2}}{2}$

19) $1 - \sin^2 30° - \sin^2 60°$

A) 0 B) $\frac{1}{4}$ C) 1 D) $\frac{1 - \sqrt{3}}{2}$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

20) Find the exact value of $\sin 135° - \sin 270°$. Do not use a calculator.

21) Find the exact value of $\cos 120° \tan 60°$. Do not use a calculator.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the approximate value of the expression rounded to two decimal places.

22) $\cos 17°$

A) 0.96 B) –0.22 C) –0.28 D) 1.02

23) $\csc 11°$

A) –0.95 B) 5.24 C) 5.29 D) –1.00

Solve the problem.

24) What is the range of the cosine function?

A) all real numbers greater than or equal to 1 or less than or equal to –1

B) all real numbers greater than or equal to 0

C) all real numbers

D) all real numbers from –1 to 1, inclusive

25) What is the range of the tangent function?

A) all real numbers

B) all real numbers greater than or equal to 1 or less than or equal to –1

C) all real numbers from –1 to 1, inclusive

D) all real numbers, exceptodd multiples of $\frac{\pi}{2}(90)°$

26) What is the domain of the cosine function?

A) all real numbers, except odd multiples of $\frac{\pi}{2}$ (90°)

B) all real numbers, except integral multiples of π (180°)

C) all real numbers

D) all real numbers from –1 to 1, inclusive

Use the fact that the trigonometric functions are periodic to find the exact value of the expression.

27) $\sin 765°$

A) $\frac{1}{2}$ B) $\frac{\sqrt{2}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $-\frac{1}{2}$

28) $\tan 390°$

A) $\sqrt{3}$ B) $\frac{\sqrt{3}}{3}$ C) $-\sqrt{3}$ D) $\frac{\sqrt{3}}{2}$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

29) Wildlife management personnel use *predator–prey equations* to model the populations of certain predators and their prey in the wild. Suppose the population M of a predator after t months is given by

$$M = 750 + 125 \sin \frac{\pi}{6} t$$

while the population N of its primary prey is given by

$$N = 12{,}250 + 3050 \cos \frac{\pi}{6} t$$

Find the period for each of these functions.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Name the quadrant in which the angle θ lies.

30) $\cos \theta < 0$ and $\csc \theta < 0$

A) Quadrant IV B) Quadrant II C) Quadrant III D) Quadrant I

31) $\cot \theta < 0$ and $\cos \theta > 0$

A) Quadrant IV B) Quadrant III C) Quadrant I D) Quadrant II

32) $\sec \theta < 0$ and $\tan \theta < 0$

A) Quadrant IV B) Quadrant II C) Quadrant III D) Quadrant I

33) $\sin \theta > 0$ and $\cos \theta > 0$

A) Quadrant II B) Quadrant IV C) Quadrant III D) Quadrant I

Find the exact value of the requested trigonometric function of θ.

34) $\sec \theta = \frac{9}{8}$ and θ in quadrant IV

Find $\tan \theta$.

A) $-\frac{9}{8}$ B) $-\frac{\sqrt{17}}{8}$ C) $-\frac{\sqrt{17}}{9}$ D) $-\sqrt{17}$

35) $\cos\theta = \frac{8}{17}$ and $\frac{3\pi}{2} < \theta < 2\pi$

Find $\cot\theta$.

A) $-\frac{15}{8}$ B) $-\frac{8}{3}$ C) $-\frac{8}{15}$ D) $\frac{17}{8}$

Use the even-odd properties to find the exact value of the expression.

36) $\sin(-60°)$

A) $-\frac{1}{2}$ B) $\frac{1}{2}$ C) $\frac{\sqrt{3}}{2}$ D) $-\frac{\sqrt{3}}{2}$

37) $\cos(-150°)$

A) $-\frac{\sqrt{3}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{1}{2}$ D) $\frac{-1}{2}$

38) $\cos(-\pi)$

A) Undefined B) 0 C) 1 D) -1

Give the amplitude or period as requested.

39) Amplitude of $y = -3\sin 5x$

A) $\frac{3}{5}$ B) $\frac{\pi}{5}$ C) $\frac{\pi}{3}$ D) 3

40) Period of $y = -5\cos\frac{1}{2}x$

A) $\frac{5\pi}{2}$ B) 4π C) $\frac{\pi}{2}$ D) -5

Determine the amplitude and period of the function without graphing.

41) $y = -\frac{3}{4}\sin(\frac{2}{5}x)$

A) amplitude $= \frac{4}{3}$; period $= 5$

B) amplitude $= -\frac{3}{4}$; period $= 5\pi$

C) amplitude $= \frac{3}{4}$; period $= \frac{4\pi}{5}$

D) amplitude $= \frac{3}{4}$; period $= 5\pi$

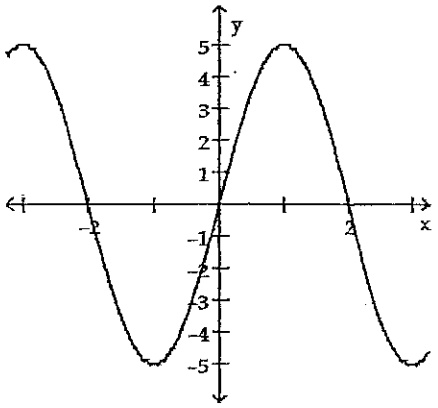
Write the equation of a sine function with the given characteristics.

42) Amplitude: 4
Period: 3

A) $y = 4\sin\left(\frac{2}{3}\pi x\right)$ B) $y = 4\sin(3x)$ C) $y = 3\sin\left(\frac{1}{2}\pi x\right)$ D) $y = \sin(3\pi x) + 4$

Find an equation for the graph.

43)



$y = 5\sin\frac{\pi}{2}x$

A) $y = 3\sin\left(\frac{\pi}{5}x\right)$ B) $y = 3\sin(5\pi x)$ C) $y = 5\sin\left(\frac{\pi}{2}x\right)$ D) $y = 5\sin\left(\frac{\pi}{3}x\right)$

Solve.

44) For what numbers x, $0 \le x \le 2\pi$, does $\sin x = 0$?

A) $0, \pi, 2\pi$ B) $0, 1$ C) $0, 1, 2$ D) $\frac{\pi}{2}, \frac{3\pi}{2}$

45) For what numbers x, $0 \le x \le 2\pi$, does $\cos x = 1$?

A) $\frac{\pi}{2}, \frac{3\pi}{2}$ B) $0, 2\pi$ C) $\frac{\pi}{2}$ D) None

46) For what numbers x, $0 \le x \le 2\pi$, does $\sin x = -1$?

A) π B) None C) $\frac{\pi}{2}, \frac{3\pi}{2}$ D) $\frac{3\pi}{2}$

Find the phase shift of the function.

47) $y = -5\cos\left(x + \frac{\pi}{2}\right)$

A) –5 units down B) $\pi/2$ units to the right C) $\pi/2$ units to the left D) –5 units up

48) $y = 5\cos(4x + \pi)$

A) 5π units to the right B) $\pi/5$ units to the left C) 4π units to the right D) $\pi/4$ units to the left

Solve the problem.

49) The temperature T of a patient during a 5–day illness is given in the following table.

Day, x	0	1	2	3	4	5
Temperature, T	102.5	104.8	105.2	102.1	99.5	98.9

Fit a sine function to the data in the table. From the graph of the sinusoidal function of best fit, estimate the highest temperature reached during the 5 –day illness. Round answer to 1 decimal place.

A) 105.4° B) 105.2° C) 105.3° D) 105.5°

Write the equation of a sine function with the given characteristics.

50) Amplitude: 3
Period: 4π
Phase Shift: $-\frac{\pi}{4}$

A) $y = 3\sin\left(\frac{1}{2}x - \frac{1}{8}\pi\right)$ B) $y = 3\sin\left(\frac{1}{2}x + \frac{1}{8}\pi\right)$ C) $y = 3\sin\left(2x - \frac{1}{8}\pi\right)$ D) $y = 3\sin\left(4x - \frac{\pi}{4}\right)$

Exam

Name_____

Midyear Review chapter 6
Show all work. Remember to try some of these problems without a calculator.
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the value of the expression.

1) $\tan^{-1} -1$

A) $\frac{5\pi}{4}$ B) $\frac{\pi}{4}$ C) $-\frac{\pi}{4}$ D) $\frac{7\pi}{4}$

2) $\sin^{-1} \frac{\sqrt{2}}{2}$

A) $\frac{2\pi}{3}$ B) $\frac{\pi}{3}$ C) $\frac{3\pi}{4}$ D) $\frac{\pi}{4}$

3) $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

A) $\frac{-\pi}{4}$ B) $\frac{3\pi}{4}$ C) $\frac{\pi}{4}$ D) $\frac{-3\pi}{4}$

4) $\sin^{-1} -0.5$

A) $\frac{\pi}{6}$ B) $\frac{7\pi}{3}$ C) $-\frac{\pi}{6}$ D) $\frac{\pi}{3}$

Use a calculator to find the value of the expression in radian measure rounded to 2 decimal places.

5) $\cos^{-1}\left(\frac{1}{6}\right)$

A) 0.17 B) 1.40 C) 9.59 D) 80.41

6) $\sin^{-1}\left(\frac{\sqrt{5}}{3}\right)$

A) 48.19 B) 41.81 C) 0.73 D) 0.84

Find the exact value of the expression.

7) $\cos\left(\sin^{-1}\frac{1}{4}\right)$

A) $\frac{\sqrt{15}}{2}$ B) $\frac{4\sqrt{15}}{15}$ C) $\frac{\sqrt{15}}{4}$ D) $\frac{2\sqrt{15}}{15}$

8) $\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$

A) $\frac{4\pi}{5}$ B) $\frac{5\pi}{6}$ C) $\frac{\pi}{3}$ D) $\frac{\pi}{6}$

9) $\csc^{-1}(2)$

A) $\frac{5\pi}{6}$ B) $-\frac{\pi}{6}$ C) $\frac{\pi}{3}$ D) $\frac{\pi}{6}$

10) $\sec^{-1}(-2)$

A) $\frac{2\pi}{3}$ B) $-\frac{\pi}{3}$ C) $-\frac{2\pi}{3}$ D) $\frac{4\pi}{3}$

Complete the identity.

11) $\frac{\sec\theta \sin\theta}{\tan\theta} - 1 = ?$

A) 1 B) 0 C) $-\sec^2\theta$ D) $1 - \sin\theta$

12) $\sec\theta - \frac{1}{\sec\theta} = ?$

A) $1 + \cot\theta$ B) $-2\tan^2\theta$ C) $\sec\theta \csc\theta$ D) $\sin\theta \tan\theta$

Find the exact value by using a sum or difference identity.

13) $\sin 165°$

A) $\frac{\sqrt{2}(\sqrt{3}-1)}{4}$ B) $-\sqrt{2}(\sqrt{3}-1)$ C) $-\frac{\sqrt{2}(\sqrt{3}-1)}{4}$ D) $-\sqrt{2}(\sqrt{3}+1)$

14) $\sin\frac{\pi}{12}$

A) $-\frac{\sqrt{2}(\sqrt{3}-1)}{4}$ B) $\frac{\sqrt{2}(\sqrt{3}-1)}{4}$ C) $-\sqrt{2}(\sqrt{3}-1)$ D) $\sqrt{2}(\sqrt{3}-1)$

Use trigonometric identities to find the exact value.

15) $\sin 10° \cos 50° + \cos 10° \sin 50°$

A) $\frac{1}{6}$ B) $\frac{1}{2}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{3}}{3}$

Complete the identity.

16) $\cos\left(\frac{\pi}{2} + \theta\right) = ?$

A) $-\sin\theta$ B) $\cos\theta$ C) $-\cos\theta$ D) $\sin\theta$

Find the exact value of the expression under the given conditions.

17) $\sin\theta = \frac{20}{29}, \quad 0 < \theta < \frac{\pi}{2}$

Find $\cos(2\theta)$.

A) $\frac{840}{841}$ B) $\frac{41}{841}$ C) $-\frac{41}{841}$ D) $\frac{42}{841}$

18) $\cos\theta = -\frac{1}{3}, \quad \csc\theta < 0$

Find $\cos(2\theta)$.

A) $\frac{-4\sqrt{2}}{9}$ B) $\frac{7}{9}$ C) $-\frac{7}{9}$ D) $\frac{4\sqrt{2}}{9}$

Solve the equation for solutions in the interval $0 \le \theta < 2\pi$.

19) $5 \csc \theta - 2 = 3$

A) π B) 2π C) $\frac{\pi}{2}$ D) $\frac{3\pi}{2}$

Use a calculator to solve the equation on the interval $0 \le \theta < 2\pi$. Round the answer to two decimal places.

20) $\tan \theta = 3.7$

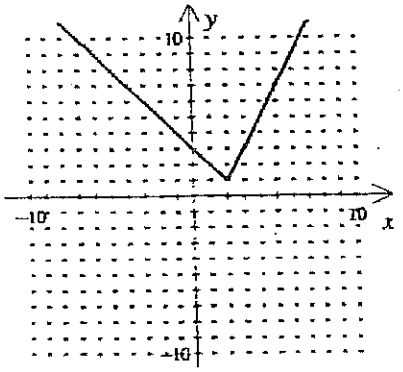
A) 1.31, 1.83 B) 1.31, 4.45 C) 1.31, 2.88 D) 1.31, 4.98

Answer Key
Testname: MIDYEAR EXAM REVIEW CHAP 1.TST

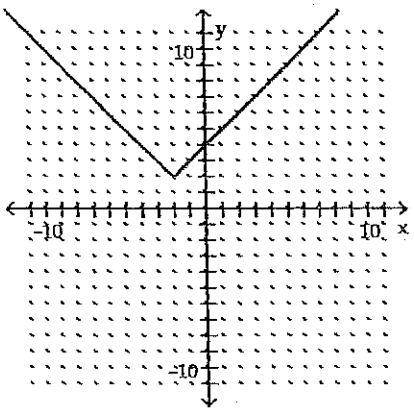
1) Answer: D
2) Answer: B
3) Answer: D
4) Answer: B
5) Answer: x-intercepts are -4, 3, and 7
y-intercept is -5
6) Answer: D
7) Answer: B
8) Answer: B
9) Answer: C
10) Answer: A
11) Answer: B
12) Answer: B
13) Answer: B
14) Answer: A
15) Answer: B
16) Answer: C
17) Answer: B
18) Answer: C
19) Answer: D
20) Answer: $y = 4$
21) Answer: $y = -\frac{6}{5}x - \frac{2}{5}$
22) Answer: A
23) Answer: C
24) Answer: A

Answer Key
Testname: MIDYEAR EXAM REVIEW CHAP 2

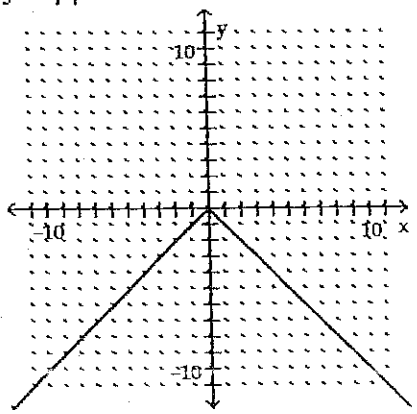
1) Answer: B
2) Answer: B
3) Answer: A
4) Answer: D
5) Answer: C
6) Answer: A
7) Answer: B
8) Answer: B
9) Answer: B
10) Answer: A
11) Answer: C
12) Answer:



13) Answer: D
14) Answer:



15) Answer: B
16) Answer: $y = -|x|$



17) Answer: C
18) Answer: C
19) Answer: B
20) Answer: C
21) Answer: B
22) Answer: B
23) Answer: B
24) Answer: B

Answer Key
Testname: MIDYEAR EXAM REVIEW CHAP 5.TST

1) Answer: C
2) Answer: B
3) Answer: C
4) Answer: D
5) Answer: D
6) Answer: D
7) Answer: D
8) Answer: A
9) Answer: A
10) Answer: A
11) Answer: C
12) Answer: D
13) Answer: $\sin\frac{3}{2}\pi = -1$; $\cos\frac{3}{2}\pi = 0$
14) Answer: D
15) Answer: D
16) Answer: C
17) Answer: 0
18) Answer: C
19) Answer: A
20) Answer: $\frac{\sqrt{2}+2}{2}$
21) Answer: $-\frac{\sqrt{3}}{2}$
22) Answer: A
23) Answer: B
24) Answer: D
25) Answer: A
26) Answer: C
27) Answer: B
28) Answer: B
29) Answer: 12; 12
30) Answer: C
31) Answer: A
32) Answer: B
33) Answer: D
34) Answer: B
35) Answer: C
36) Answer: D
37) Answer: A
38) Answer: D
39) Answer: D
40) Answer: B
41) Answer: D
42) Answer: A
43) Answer: C
44) Answer: A
45) Answer: B
46) Answer: D
47) Answer: C
48) Answer: D
49) Answer: A
50) Answer: B

Answer Key
Testname: MIDYEAR EXAM REVIEW CHAP 6.TST

1) Answer: C
2) Answer: D
3) Answer: B
4) Answer: C
5) Answer: B
6) Answer: D
7) Answer: C
8) Answer: B
9) Answer: D
10) Answer: A
11) Answer: B
12) Answer: D
13) Answer: A
14) Answer: B
15) Answer: C
16) Answer: A
17) Answer: B
18) Answer: C
19) Answer: C
20) Answer: B

Exam B

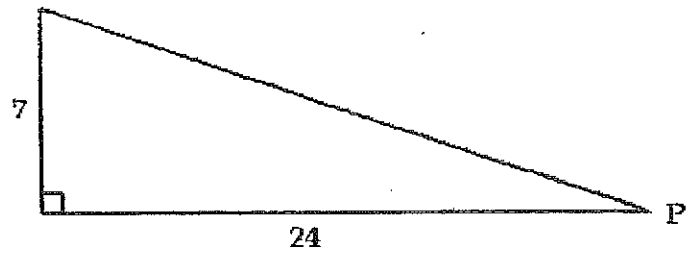
Name_____

Review chap 7

ORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

1) Find the exact value of each of the six trigonometric functions of the angle P.



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Two sides of a right triangle ABC (C is the right angle) are given. Find the indicated trigonometric function of the given angle. Give exact answers with rational denominators.

2) Find cos A when $a = \sqrt{5}$ and $c = 6$

A) $\frac{5}{6}$ B) $\frac{\sqrt{31}}{6}$ C) $\frac{31}{5}$ D) $\frac{\sqrt{5}}{6}$

Find the exact value of the expression. Do not use a calculator.

3) $-\frac{\sec 30^\circ}{\csc 60^\circ}$

A) 0 B) 1 C) -1 D) Undefined

4) $\tan 75^\circ - \frac{\cos 15^\circ}{\cos 75^\circ}$

A) 0 B) 2 C) -1 D) 1

5) If $\tan\theta = 6$, find the exact value of $\cot\left(\frac{\pi}{2} - \theta\right)$.

A) 6 B) 7 C) 5 D) 0.17

Solve the right triangle using the information given. Assume side c is the hypotenuse, and that sides a and b are opposite to angles α and β respectively. Round answers to two decimal places, if necessary.

6) $a = 4$, $\beta = 20^\circ$. Find b, c, and α.

A) $\alpha = 70^\circ$, $b = 8.95$, $c = 9.80$ B) $\alpha = 70^\circ$, $b = 10.99$, $c = 11.70$

C) $\alpha = 70^\circ$, $b = 1.46$, $c = 4.26$ D) $\alpha = 70^\circ$, $b = 1.79$, $c = 4.38$

Solve the problem.

7) A surveyor is measuring the distance across a small lake. He has set up his transit on one side of the lake120 feet from a piling that is directly across from a pier on the other side of the lake. From his transit, the angle between the piling and the pier is70°. What is the distance between the piling and the pier to the nearest foot?

A) 44 feet B) 330 feet C) 41 feet D) 113 feet

8) Given a triangle with $a = 11$, $\gamma = 35°$, and $\beta = 16°$, what is the length of c? Round the answer to two decimals places.

A) $c = 5.29$ B) $c = 22.89$ C) $c = 8.12$ D) $c = 31.01$

Find the missing parts of the triangle.

9) $\beta = 24.0°$
$\gamma = 114.3°$
$b = 37.13$

A) $\alpha = 41.7°, a = 62.73, c = 85.20$ B) $\alpha = 39.7°, a = 83.20, c = 60.73$

C) $\alpha = 39.7°, a = 85.20, c = 62.73$ D) $\alpha = 41.7°, a = 60.73, c = 83.20$

Solve the problem.

10) Given a triangle with $a = 9, b = 11, \alpha = 31°$, what is (are) the possible length(s) of c ? Round your answer to two decimal places.

A) $c = 14.21$ B) $c = 16.42$ or 2.44 C) $c = 16.42$ or 3.41 D) $c = 6.61$

Find the missing parts of the triangle.

11) $\beta = 83.5°$
$b = 12.45$
$a = 23.5$

A) $\alpha = 41.75°, \gamma = 54.75°, c = 35.95$ B) $\alpha = 42.75°, \gamma = 54.75°, c = 39.95$

C) No solution D) $\alpha = 40.75°, \gamma = 54.75°, c = 37.95$

12) $\beta = 11.6°$
$b = 5.69$
$a = 9.43$

A) $\alpha = 19.47°, \gamma = 148.93°, c = 14.6;$ $\alpha' = 160.53°, \gamma' = 7.87°, c' = 3.87$ B) $\alpha = 160.53°, \gamma = 7.87°, c = 3.87$

C) $\alpha = 19.47°, \gamma = 148.93°, c = 14.6$ D) No solution

Solve the triangle. Assume that sides a, b, and c are opposite angles α, β, and γ respectively. Round answers to two decimal places, if necessary.

13) $a = 7$
$b = 9$
$\beta = 49°$

A) $\alpha = 9.01°, \gamma = 121.99°, c = 7.87$ B) $\alpha = 76.01°, \gamma = 54.99°, c = 7.60$

C) $\alpha = 35.94°, \gamma = 95.06°, c = 11.88$ D) $\alpha = 35°, \gamma = 96°, c = 12.14$

Solve the problem.

14) An airplane is sighted at the same time by two ground observers who are2 miles apart and in line with the airplane. They report the angles of elevation as10° and 22°. How high is the airplane?

A) 0.35 miles B) 0.75 miles C) 1.35 miles D) 0.63 miles

15) Given a triangle with $b = 6, c = 7$, and $\alpha = 146°$, what is the length of a? Round the answer to two decimal places.

A) $a = 12.44$ B) $a = 3.92$ C) $a = 4.65$ D) $a = 10.95$

16) Solve the triangle given that $a = 19$, $b = 16$, $c = 11$.

A) $\alpha = 87.39°, \beta = 35.33°, \gamma = 57.27°$ B) $\alpha = 35.33°, \beta = 57.27°, \gamma = 87.39°$

C) $\alpha = 87.39°, \beta = 57.27°, \gamma = 35.33°$ D) $\alpha = 57.27°, \beta = 87.39°, \gamma = 35.33°$

17) In flying the 84 miles from Champaign to Peoria, a student pilot sets a heading that is 12° off course and maintains an average speed of 136 miles per hour. After 15 minutes, the instructor notices the course error and tells the student to correct his heading. Through what angle will the plane move to correct the heading and how many miles away is Peoria when the plane turns?

A) 19.9°; 73.61 miles B) 160.1°; 73.61 miles C) 160.1°; 51.23 miles D) 19.9°; 51.23 miles

Find the area of the triangle with the given parts.

18) $\alpha = 34.3°$
$b = 13.0$ in.
$c = 4.0$ in.

A) 23 in.^{2} B) 15 in.^{2} C) 13 in.^{2} D) 21 in.^{2}

19) Find the area of a triangle with sides 4 m, 5 m, and 7 m. Round to the nearest hundredth.

A) 3.46 m^2 B) 10.00 m^2 C) 16.00 m^2 D) 9.80 m^2

Solve the problem.

20) A room in the shape of a triangle has sides of length 7 yd, 10 yd, and 15 yd. If carpeting costs $18.50 a square yard and padding costs $4.25 a square yard, how much to the nearest dollar will it cost to carpet the room, assuming that there is no waste?

A) $544 B) $647 C) $654 D) $669

The distance that an object travels in t seconds is given. What is the maximum displacement from its resting position, the time required for one oscillation, and the frequency?

21) $d = -3 \sin(5t)$ meters

A) a = 3 meters, period $= \frac{5}{2\pi}$ seconds, f $= \frac{2}{5}\pi$ oscillations/second

B) a = 3 meters, period $= \frac{2}{5}\pi$ seconds, f $= \frac{5}{2\pi}$ oscillations/second

C) a = −3 meters, period $= 5\pi$ seconds, f $= \frac{5}{\pi}$ oscillations/second

D) a = −3 meters, period $= \frac{2}{5}\pi$ seconds, f $= \frac{5}{2\pi}$ oscillations/second

Answer Key
Testname: UNTITLED1.TST

1) Answer: $\sin P = \frac{7}{25}$, $\cos P = \frac{24}{25}$, $\tan P = \frac{7}{24}$, $\csc P = \frac{25}{7}$, $\sec P = \frac{25}{24}$, and $\cot P = \frac{24}{7}$

2) Answer: B
3) Answer: C
4) Answer: A
5) Answer: A
6) Answer: C
7) Answer: B
8) Answer: C
9) Answer: D
10) Answer: B
11) Answer: C
12) Answer: A
13) Answer: C
14) Answer: D
15) Answer: A
16) Answer: C
17) Answer: D
18) Answer: B
19) Answer: D
20) Answer: D
21) Answer: B