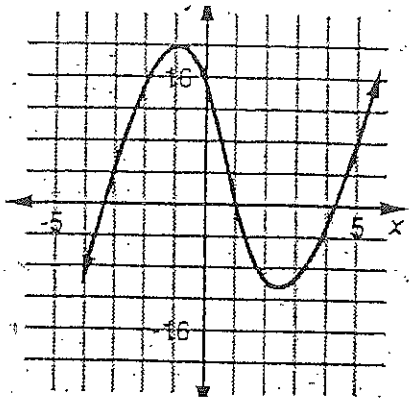
Pre-Calculus I Midyear Exam Review

1. Which of the following types of polynomials is graphed?



a. quartic
b. cubic
c. quintic
d. quadratic
e. None of these is possible

2. Which of the following is the equation of a line parallel to $y = 2x + 3$ with an $x-$intercept of $(6, 0)$?

a. $y = 2x + 6$
b. $y = -2x - 12$
c. $y = 2x - 12$
d. $y = -2x + 12$
e. none of the above

3. If $f(x)$ is a linear function such that $f(1) = 2$ and $f(5) = 4$, then $f(-1) = ?$

a. -1
b. 1
c. 2
d. 0
e. -3

4. Which of the following is a zero of $P(x) = x^3 + 4x^2 - 15x - 18$?

a. -9
b. -1
c. -3
d. 6
e. None of these

. Convert 240° into radians.

a. $\frac{3\pi}{4}$

b. $\frac{5\pi}{3}$

c. $\frac{4\pi}{3}$

d. $\frac{7\pi}{6}$

e. $\frac{5\pi}{4}$

Which of the following angles is coterminal with $\frac{\pi}{3}$?

a. $5\pi/3$
b. $-7\pi/3$
c. $17\pi/3$
d. $-5\pi/3$
e. $-19\pi/3$

. A circular sector has a radius of 9 cm and a central angle of $\frac{2\pi}{3}$ radians. The arc length is:

a. 6π cm
b. 12π cm
c. 9π cm
d. 18π cm
e. 4.5π cm

. If $\sin\theta = \frac{-12}{13}$ and θ terminates in Quadrant IV then $\cos\theta =$

a. $\frac{12}{13}$

b. $\frac{-5}{12}$

c. $\frac{5}{13}$

d. $\frac{-5}{13}$

e. $\frac{-13}{5}$

. Solve $\sec\theta = -5$ for $0° \le \theta \le 180°$ to the nearest tenth of a degree.

a. 8.5°
b. 78.5°
c. 101.5°
d. 191.5°
e. none of these

. In a window of 0° to 180°, the graphs of $\sin(x)$ and $\cos(x)$ will intersect at:

a. 45°
b. 135°
c. 225°
d. –45°
e. 0°

11) Find $\sin\theta$ from the diagram to the right. $P(-9,-40)$

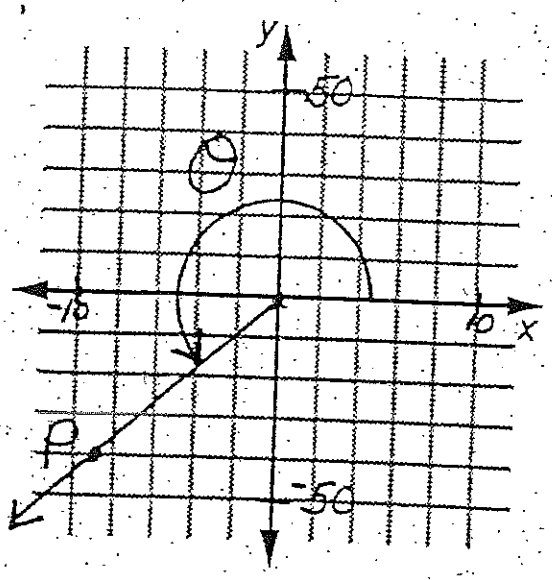
a. $\frac{-41}{40}$

b. $\frac{-40}{41}$

c. $\frac{41}{9}$

d. $\frac{-41}{9}$

e. $\frac{9}{40}$



12) Express $\cos(128°)$ in terms of its reference angle:

a. $\cos 232°$

b. $\cos(-38°)$

c. $-\cos 38°$

d. $-\cos 52°$

e. None of these

3) An airplane is flying at an altitude of 1.8939 mile. When the plane passes over a point on the ground that is 27.1507 miles from an airport's runway, the plane starts to descend. At what angle should the plane make its descent to the airport?

a. 2°

b. 4°

c. 86°

d. 87°

e. none of these

4) Find the approximate perimeter of an isosceles triangle with a base of 8 and a vertex angle of 20°.

a. 19
b. 100
c. 54
d. 24
e. None of these

Acute triangle ABC has area 84. If $a = 15$ and $b = 14$, an approximate measure for $\angle C$ could be

a. 37°
b. 74°
c. 53°
d. 106°
e. none of these

In ΔRST, $r = 8.5\ cm$, $\angle S = 61.25°$, and $\angle R = 84.75°$. To the nearest tenth, the length of side s is

a. 15.14 cm
b. 13.33 cm
c. 5.42 cm
d. 9.65 cm
e. 7.48 cm

In ΔABC, $a = 4$, $b = 3$, and $c = 6$. To the nearest degree, the measure of $\angle C$ is

a. 62°
b. 71°
c. 117°
d. 126°
e. 153°

$\tan\left(Sin^{-1}\left(\frac{\sqrt{3}}{2}\right)\right) =$

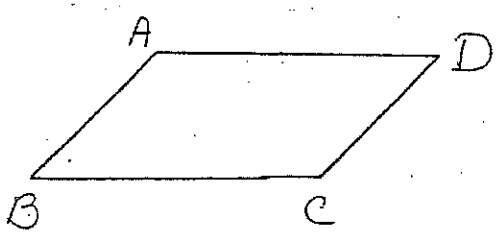
a. $\frac{\sqrt{3}}{3}$
b. $\sqrt{3}$
c. $\frac{1}{2}$
d. $\frac{2\sqrt{3}}{3}$
e. $\frac{\sqrt{3}}{2}$

When the angle of elevation of the sun is $28°$, the Eiffel Tower in Paris casts a shadow 1820 feet long. To the nearest foot, how tall is the tower?

a. 1607 feet
b. 854 feet
c. 968 feet
d. 3423 feet
e. 3877 feet

In parallelogram $ABCD$, $AB = 12$, $BC = 20$, $< B = 30°$. Find the length of the altitude from point A to side BC.

a. 6
b. $6\sqrt{3}$
c. 12
d. 8
e. none of these



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

Chapter 7

1. Convert 315° to radians.

   a. $\pi/4$ b. $7\pi/4$ c. $5\pi/4$ d. $2\pi/3$ e. $3\pi/4$

2. Convert $5\pi/4$ to degrees.

   a. 225° b. 330° c. 135° d. 270° e. 315°

3. Which of the following pairs of angles are coterminal?

   a. 140° and 500° b. 130° and -130° c. 120° and 400° d. 60° and -200° e. 45° and 225°

4. If sin B = cos B, what is the measure of angle B?

   a. $\pi/6$ b. $\pi/2$ c. $\pi/3$ d. $\pi/4$ e. $\pi/5$

5. If sin A = -3/5 and tan A is negative, then cos A equals

   a. 5/3 b. 4/5 c. -4/3 d. 4/3 e. -4/5

6. In a window of -360° to 360° with a y-scale from -2 to 2, the graph to the right is the graph of which equation?

   a. y=cos x b. y=sin x c. y=tan x
   d. y= csc x e. y=sec x

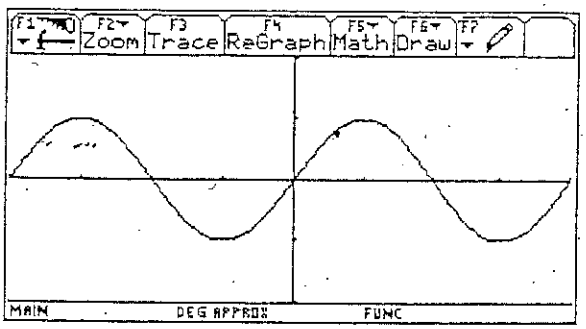


Figure 5 - exercise 6

7. In a circle of radius 5 inches, a central angle of 3.2 radians intercepts an arc whose length, in inches, is

   a. 16 b. 3 c. 16/25
   b. 16π e. 25

8. In a window of 0° to 360°, the graphs of sin(x) and cos(x) will intersect how many times?

   a. 0 b. 1 c. 2 d. 3 e. 4

9. A circular sector has radius of 10 cm and arc length of 12 cm. What is the measure of the central angle in radians?

   a. 1.2 b. .83 c. 1.5 d. 2 e. 1.4

10. A sector of a circle has central angle 30° and arc length 3.5 cm. Its area to the nearest square cm is

    a. 105 b. 12 c. 18 d. 35 e. 75

11. $\sin 135° =$ _____

a. $\sin 225°$ b. $\sin 315°$ c. $\sin 45°$ d. $\sin 30°$ e. $\cos 135°$

12. How many solutions does the equation $\sin x = 0.5x$ have?

a. 0 b. 1 c. 2 d. 3 e. 4

13. Find $\cos(\text{Tan}^{-1}(-2))$ to the nearest thousandth.

a. .345 b. .447 c. .832 d. .212 e. undefined

14. Find $\cos^{-1}(2)$

a. 0° b. 45° c. 90° d. 180° e. undefined

Chapter Seven

1. b
2. a
3. a
4. d
5. b
6. b
7. a
8. c
9. a
10. b
11. c
12. d
13. b
14. e

Chapter Nine

1. b
2. e
3. e
4. c
5. b
6. b
7. a
8. b
9. c
10. e

Chapter 9

1. The area of a triangle, to the nearest square inch, with sides 27" , 40" and 34" is

   a. 907 b. 453 c. 18,360 c. 36,720 d. none of the above

2. In right triangle ABC, where C is the right angle, if $\angle A = 35°$, then

   a. $\cos A = a/12$ b. $\cos A = b/12$ c. $\sin A = b/a$ d. $\sin A = a/12$ e. $\tan A = a/b$

3. A bearing of 130° is the same as which of the following

   a. N 40° E b. N 40° W c. S 40°E d. S 50° W e. S 50° E

4. Find the measure of the largest angle in a triangle with sides 3, 6, and 7 inches.

   a. 86.8° b. 83.6° c. 96.4° d. 96.4° or 83.6° e. none of the above

5. In triangle PQR, p=5, q=10, and the area of the triangle is 15. What are the possible measures of $\angle R$?

   a. 45° and 135° b. 36.9° and 143.1° c. 123° and 57° d. 30° and 150° e. 30° and 60°

6. In triangle RST, $\angle S = 126°$, s=12 and t=7. What is/are the possible measure(s) for $\angle T$?

   a. 13.3° b. 28.2° c. 151.8° d. 28.2° or 151.8° e. none of the above

7. A triangle has sides 6, 12, and 15. Find the length of the median to the longest side.

   a. 5.81 b. 3.22 c. 4.86 d. 3.5 e. 33.75

8. A parallelogram has a 70° angle and sides 6 cm and 10 cm long. How long are its diagonals?

   a. 9.3 and 13.7 b. 9.7 and 13.3 c. 6.2 and 8.4 d. 6.8 and 8.6 e. 10.2 and 12.4

9. A plane flies 600 miles on a course of 300°. It then flies south for a while and finally flies on a course of 40° to return to its starting point. Approximately how many miles did the plane fly south?

   a. 600 b. 200 c. 919 d. 817 e. 613

10. In triangle XYZ, x=3, y=8, and $\angle Z = 120°$. To the nearest hundredth, find z.

    a. 11.00 b. 7.59 c. 10.30 d. 15.62 e. none of the above.

Open-ended question

Both angles A and B are first quadrant angles. Use the following information to find the EXACT values indicated. Your answers must be in fraction/radical form. **Decimal answers will not be accepted.** (each part is 2 points)

$\sin A = \frac{5}{13}$ $\cos B = \frac{8}{17}$

Find these values:

_____ A. $\tan B$

_____ B. $\cos A$

_____ C. $\cos(A - B)$

_____ D. $\sin 2A$