1) a) $(f \circ g)(2) = -5$ b) $(g \circ f)(2) = 88$ c) **No**

2) Undefined, Is g(2) in the domain of f? No

3) $(f \circ g)(-9)$ is undefined. $(g \circ f)(4) = 15$

Domain of f(x): [0,∞), Domain of g(x): All reals.

Domain of f(g(x))= [-5.5, ∞) Domain of g(f(x))= [0,∞)

FINDING A COMPOSITE FUNCTION

1) a) $F(g(x))=(x-3)(x-1)=x^2-4x+3$ $g(f(x))= (x+3)(x-1)=x^2+2x-3$

b) F(g(3)) = 0, g(f(-2))=-3

2) $f(g(x))=\sqrt{x-5}$ [5,∞)

3) a) $f(g(x)) = \frac{1}{\frac{3}{x-2}+1} = \frac{1}{\frac{3+x-2}{x-2}} = \frac{x-2}{x+1}$, Domain $\{x|x \neq -1, x \neq 2\}$

b) $G(f(x))=\frac{-3x-3}{2x+1}$ Domain $\{x|x \neq -.5, x \neq -1\}$

4) a) Both = x b) They create an identity function.

c) They are reflections over y=x.

5) a) Both = x b) Yes c) Yes d) (b,a) e) The segment is perpendicular to y=x.

FINDING THE COMPONENTS OF A COMPOSITE FUNCTION

1) $g(x) = 2x-5$ $f(x)= x^8$

2) $f(x)=1/x$ $g(x)=x^2+1$

3) $f(g(x))=2(3x+a)^2-4*(3x+a)$ if (0,-2) is a point then

$2(3*0+a)^2-4*(3*0+a) = -2 \Rightarrow 2a^2-4a+2=0 \Rightarrow 2(a^2-2a+1)=2(x-1)^2$

X=1

FINDING THE INVERSE OF A FUNCTION

4) $f^{-1}(x)=(x-2)*3$

2.6 **APPLICATIONS OF FUNCTIONS:**

1) $V(r) = \frac{32}{81}\pi t^9$

2) a) $C(N) = 15{,}000 + 8{,}000(100t - 5t^2)$

$C(N) = -40{,}000t^2 + 800{,}000t + 15{,}000,\ 0 <= t <= 10$

b) \$2,055,000

3) $H(x) = P(x) * I(x) = (P * I)(x)$

4) $T(x) = V(x) + P(x) = (V + P)(x)$

5) $N(x) = I(x) - T(x) = (I - T)(x)$

6) $R(x) = L(x)/P(x) = (L/P)(x)$