PAP Pre Calculus Name Key

1.5 Composition of Functions HW

Given the functions f(x) and g(x) perform the following operations:

1) f(x) = 2x – 3 g(x) = 3x + 5

a) $(f \circ g)(x)$

$f(g(x)) \rightarrow f(3x+5)$

$2(3x+5)-3$

$6x+10-3 = \boxed{6x+7}$

b) $(f \circ g)(0)$

$f(g(0)) \rightarrow f(3(0)+5)$

$f(5) = 2(5)-3 = \boxed{7}$

c) $(g \circ f)(3)$

$g(f(3)) \rightarrow g(2(3)-3) \rightarrow g(3)$

$3(3)+5 = \boxed{14}$

2) f(x) = $\frac{1}{x}$ g(x) = $\frac{1}{x^2}$

a) $(g \circ f)(3)$

$g(f(3)) \rightarrow g(\frac{1}{3}) = \frac{1}{(1/3)^2} = \frac{1}{1/9}$

$= \boxed{9}$

b) $(g \circ f)(x)$

$g(f(x)) \rightarrow g(\frac{1}{x}) = \frac{1}{(1/x)^2} = \boxed{x^2}$

c) $(f \circ g)(x)$

$f(g(x)) \rightarrow f(1/x^2) = \frac{1}{1/x^2} = \boxed{x^2}$

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

a) $(f \circ g)(2)$

$f(g(2)) \rightarrow f(|2|) = f(2)$

$2^2+2-12 = \boxed{-6}$

b) $(g \circ f)(-7)$

$g(f(-7)) \rightarrow g((-7)^2+(-7)-12)$

$g(30) = |30| = \boxed{30}$

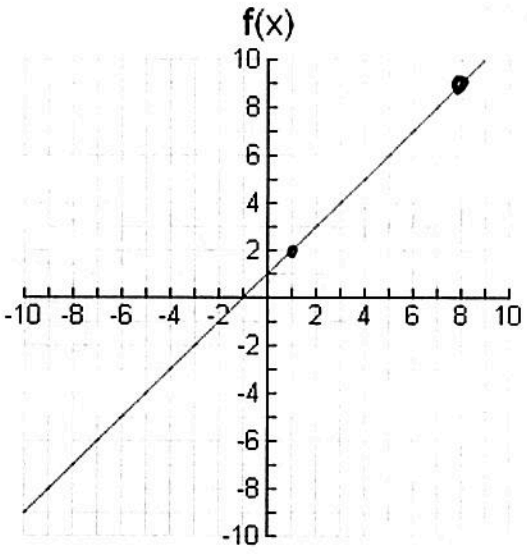
c) $(f \circ g)(x)$

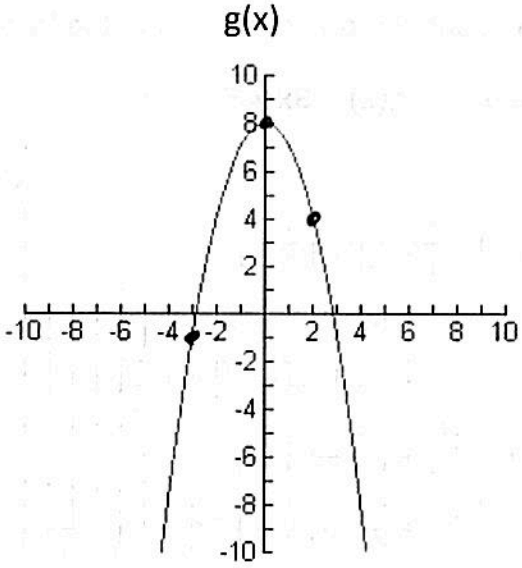
$f(g(x)) \rightarrow f(|x|)$

$\boxed{|x|^2 + |x| - 12}$

or $\boxed{x^2+x-12}$

4. Using the two graphs below, evaluate the following.





a) $f(8)$ = 9

b) $g(-3)$ = −1

c) $g(f(1))$

$g(2) = 4$

d) $f(g(0))$

$f(8) = 9$