Name: AK Period: Date:

2.5 Practice Problems

For 1- 9: Let $f(x) = 2x - 1$, $g(x) = 3x$, and $h(x) = x^2 + 1$. Compute the following:

1. f(g(-3))

-19

2. f(h(7))

99

3. (g∘h)(24)

1731

4. f(g(h(2)))

29

5. h(g(f(5)))

730

6. g(f(h(-6)))

219

7. f(x + 1)

$2(x+1)-1$

$2x+2-1$

$2x+1$

8. g(3a)

$3(3a)$

$9a$

9. h(x – 2)

$(x-2)^2+1$

$x^2-4x+4+1$

x^2-4x+5

10. Given $f(x) = x - 1$ and $g(x) = x^2 + 2x - 8$, find $(g \circ f)(x)$

$(x-1)^2+2(x-1)-8$

$x^2-2x+1+2x-2-8$

x^2-9

11. Use the following for a-d, $f(x) = 2x^2 + x - 1$, $g(x) = 3 - 2x$, $k(x) = \frac{3x}{x-1}$

a) Find $(f - g)(x)$

$2x^2+3x-4$

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

$2(3-2x)^2+3-2x-1$

$8x^2-26x+20$

c) Find $\left(\frac{g}{f}\right)(x)$ and its domain.

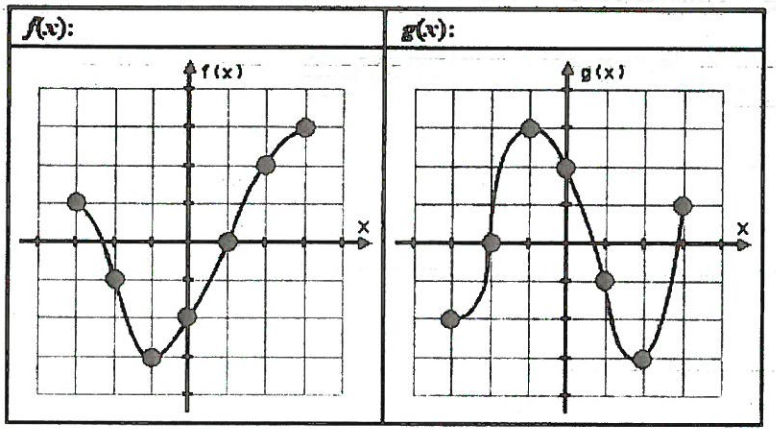
$\frac{3-2x}{2x+x-1} = \frac{3-2x}{(2x-1)(x+1)}$

$x \neq \frac{1}{2}, -1$

d) Find $k(f(g(x)))$

$\frac{24x^2-78x+60}{8x^2-26x+19}$

12. Given the graphs of f(x) and g(x), evaluate:



a. g(f((-1))

-2

b. (g + f)(0)

0

c. (f/g)(3)

$\frac{3}{1} = 3$

d. (g-f)(2)

$-3 - 2$

-5

e. 2(g(3))

$2 \cdot 1$

2

f. g(f(0))

$g(-2)$

0

13. Given $f(x) = x^2 - 5x + 4$, $g(x) = 3 - x$, $h(x) = \frac{2}{x+5}$, find:

a. f(g(h(x)))

$g(h(x)) = 3 - \frac{2}{x+5} = \frac{3x+15-2}{x+5}$

$\frac{3x+13}{x+5}$

$f(g(h(x))) = \left(\frac{3x+13}{x+5}\right)^2 - 5\left(\frac{3x+13}{x+5}\right) + 4$

b. h(f(g(x))

$f(g(x)) = (3-x)^2 - 5(3-x) + 4$

$9 - 6x + x^2 - 15 + 5x + 4$

$x^2 - x - 2$

$h(f(g(x))) = \frac{2}{x^2 - x + 3}$

14.) If $(f \circ g)(x) = \frac{4}{(5x+2)^2}$ find $g(x)$ if $f(x) = 4x^{-4}$.

$F(x) = \frac{4}{(x)^4}$

$g(x) = (5x+2)^{\frac{1}{2}}$