

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

**Simplify each expression by multiplying. Show work!**

1.  $(x^2 + 3x - 2) - (3x^2 - 3x - 5)$

2.  $(x - 1)(x + 1) - (5x - 6)$

**Find the missing polynomial. Show work.**

3.  $( ? ) + (-2x^2 + 8x - 11) = (3x^2 - 2x - 15)$

**Find an algebraic expression for  $k(x)$  using the given functions. Simplify if possible.**

$f(x) = x^2 + 3x - 4,$	$g(x) = 2x + 1,$	$h(x) = 4x^2,$	and	$j(x) = x - 1$
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4.  $k(x) = (g \cdot h)(x)$

5.  $k(x) = (f + g)(x)$

6.  $k(x) = g(x) \cdot j(x)$

7.  $k(x) = (f - j)(x)$

8.  $k(x) = (fh)(x)$

9.  $k(x) = (g \circ j)(x)$

**Find an algebraic expression for  $h(x)$  using the given functions. Simplify if possible.**

$f(x) = 4x$	and	$g(x) = x^2 - x + 1$
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10.  $h(x) = (g(f(x)))$

11.  $h(x) = (f \circ g)(x)$

Evaluate the following functions. Leave answer as a fraction. Show ALL your work.

12.  $f(x) = \frac{1}{2}x^2 - 3$ ,  $f(4)$

13.  $f(x) = \frac{8x-2}{6}$ ,  $f\left(\frac{1}{2}\right)$

Evaluate each of the following using the given function. SHOW WORK!

Let  $f(x) = 2x - 1$  and  $g(x) = \sqrt{x + 5}$

14.  $f(1) - g(4)$

15.  $f(-3) - 2g(-4)$

16.  $(f + g)(4)$

17.  $(fg)(-4)$

18.  $(g \circ f)(4)$

19.  $f(g(20))$

Suppose that the revenue  $R$ , in dollars, from selling  $x$  cell phones, in hundreds, is

$R(x) = 1.2x^2 + 220x$ . The cost  $C$ , in dollars, of selling  $x$  cell phones is

$C(x) = -0.05x^3 - 2x^2 + 65x + 500$ .

20. Find the profit function,  $P(x) = R(x) - C(x)$ .

21. Find  $P(15)$ . Explain, in words, what the answer means.

You work 40 hours per week at a furniture store. You receive a \$220 weekly salary, plus a 3% commission on sales over \$5000. Assume that you sell enough this week to get the commission. Given the functions  $f(x) = 0.03x$  and  $g(x) = x - 5000$ .

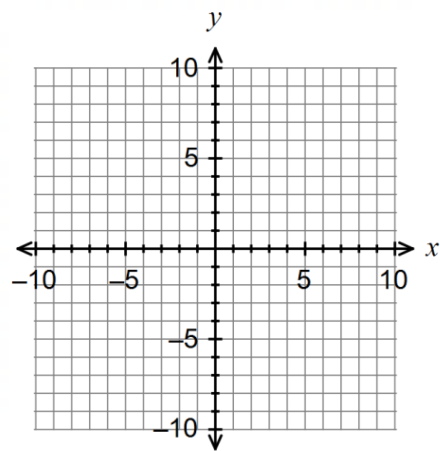
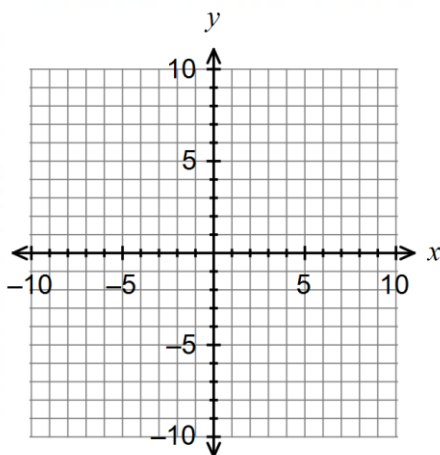
22. Find the commission equation,  $C(x) = (f \circ g)(x)$

23. Find  $C(10,000)$  and explain, in words, what the answer means.

Graph the function given. Show graphically (put a star on the point) and then algebraically how to solve for  $y$  given the value of  $x$ . Show ALL your work.

24.  $f(x) = -2x + 4$ , for  $x = -3$

25.  $f(x) = \frac{1}{2}(x - 8)$  for  $x = 4$



List all the parts of the polynomial.

26.  $4x - 5x^3 + 2x^2 - x - 6$

How many terms is the expression?

Standard form:

Leading coefficient:

All coefficients:

Constant:

Degree of the polynomial:

27.  $-4x + 3x^2 + 7$

How many terms is the expression?

Standard form:

Leading coefficient:

All coefficients:

Constant:

Degree of the polynomial:

