

Name:

Period:

Date:

**Practice Worksheet: Operations with Functions**

Perform the indicated operation and simplify completely. Give answers in standard form; rationalize the denominator when needed. Show all work to get credit.

$$f(x) = 2x^2 + 3$$

$$g(x) = 3x - 12$$

$$h(x) = 6x^2$$

$$j(x) = -3$$

1]  $(f + g)(x) =$

2]  $(h - f)(x) =$

3]  $(f \cdot g)(x) =$

4]  $\left(\frac{g}{j}\right)(x) =$

5]  $(h - g)(5) =$

6]  $(f \cdot j)(-1) =$

$$f(x) = -2\sqrt[3]{25x^2}$$

$$g(x) = 5\sqrt[3]{25x^2}$$

$$h(x) = 4\sqrt[3]{5x}$$

$$j(x) = \sqrt[3]{3125x^5}$$

7]  $(f + g)(x) =$

8]  $(g - f)(x) =$

9]  $(g \cdot h)(x) =$

10]  $\left(\frac{j}{g}\right)(x) =$

11]  $(f - g)(25) =$

12]  $\left(\frac{g}{j}\right)(5) =$

$$f(x) = 8x^{1/3} - 4$$

$$g(x) = -x^{1/3} + 2$$

$$h(x) = 6x^{-1/3}$$

$$j(x) = -3x^{2/3}$$

$$13] (f + g)(x) =$$

$$14] (g - f)(x) =$$

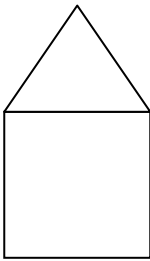
$$15] (h \cdot j)(x) =$$

$$16] \left(\frac{j}{h}\right)(x) =$$

$$17] (g - j)(512) =$$

$$18] \left(\frac{f}{g}\right)(27) =$$

- 19] Alice is making a quilt with 16 house shaped patches. Before buying the fabric, she needs to know the area of a figure made by joining an equilateral triangle and square along an edge. The function  $f(s) = \frac{\sqrt{3}}{4}s^2$  gives the area of an equilateral triangle with side  $s$ , in inches. The function  $g(s) = s^2$  gives the area of a square with side  $s$ , in inches. What function  $h(s)$  gives the area of the figure as a function of its side length  $s$ ? If she makes every square  $6'' \times 6''$ , how many square inches of fabric will she use to create the 16 house shaped patches? (Round to the nearest sq. inch.)



- 20] A company estimates that its cost and revenue can be modeled by the functions  $C(x) = 0.6x + 15,000$  and  $R(x) = 1.25x$  where  $x$  is the number of units produced. The company's profit  $P$  is modeled by  $P(x) = R(x) - C(x)$ . Find the profit equation and determine the profit when 500,000 units are produced. Show your work.