Name_____

Review - Function Basics

*This is only a few extra problems of practice. Look back over the quiz, your notes, and other areas of general interest to prepare for this test!

Find the domain of each. FAQ: Will these be on the test? A: Assume anything you see here will be on the test!

1) $f(x) = \dfrac{x^2 - 2x - 8}{\sqrt{9x + 20}}$

2) $f(x) = \dfrac{12x - 16}{\sqrt{20x - 16}}$

3) $f(x) = \dfrac{3x^2 + 15x}{\sqrt{x - 25}}$

4) $f(x) = \dfrac{\sqrt{x - 16}}{\sqrt{8x - 2}}$

Perform the indicated operation. Simplify the new equation as much as possible (within your current skills). Find the domain of the combined or composite functions in interval notation. Show any work necessary.

5) $g(x) = \sqrt{4x + 4}$
   $f(x) = x + 2$
   Find $(g \circ f)(x)$

6) $g(x) = 3x + 3$
   $h(x) = -2x^3 - 4$
   Find $g(x) \cdot h(x)$

7) $g(x) = x - 3$
   $f(x) = -3x - 1$
   Find $(g - f)(x)$

8) $g(x) = -x + 2$
   $h(x) = x^2 - 3$
   Find $\left(\dfrac{g}{h}\right)(x)$

9) $g(x) = \sqrt{x - 3}$
   $f(x) = \sqrt{2x - 1}$
   Find $(g - f)(x)$

10) $f(x) = \sqrt{4x - 5}$
    $g(x) = x^2 - 5$
    Find $f(x) - g(x)$

State the domain and range. Use interval notation.

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

12) $f(x) = -2\left(x + \dfrac{3}{2}\right)^2 + \dfrac{7}{2}$

13) $y = -3\left|3x - 1\right| - 2$

14) $y = -2\left|2x\right| + 3$

Find the inverse of each function.
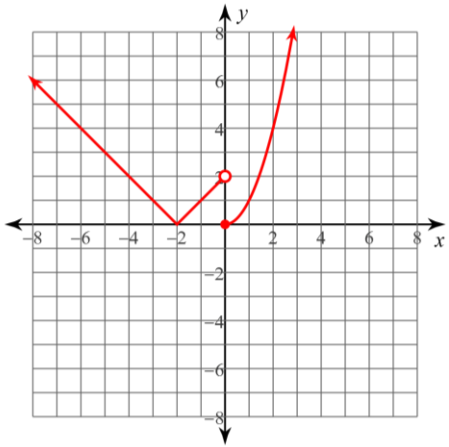
15) $f(x) = \dfrac{4}{-x + 2} - 1$

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

State if the given functions are inverses. Use the composition method to determine if they are or not.

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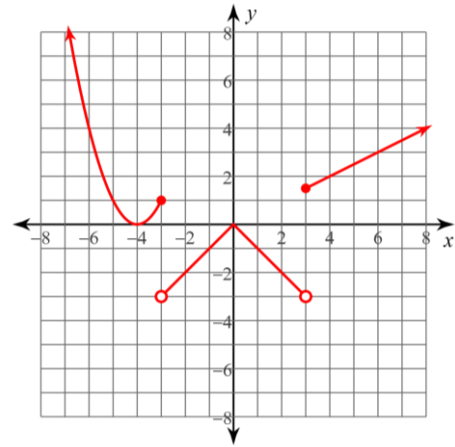 $f(x) = 2 + (x - 2)^3$

18) $g(x) = -(x + 1)^5$
    $f(x) = \sqrt[5]{x - 2} - 1$

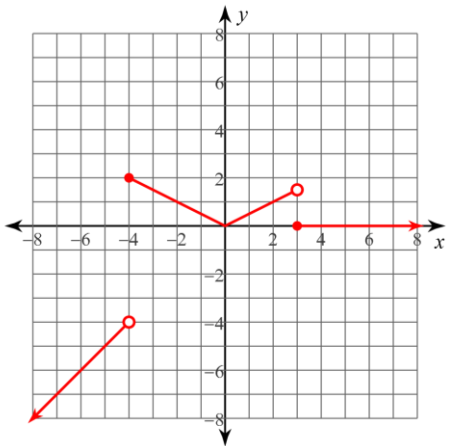**Write a piecewise function for the following graphs.**

19.

20.

21.

22.