

Name \_\_\_\_\_ Group \_\_\_\_\_

/24

### Functions: Square Root Functions

(each question is worth 2 points)

1) Given  $f(x) = \frac{1}{2}\sqrt{3x+6} - 3$ , find the zero(s).

Answer: (10, 0)

2) Given  $f(x) = -0.8\sqrt{2(2x+3)} - 4$ , find the zero(s).

Answer: no zeros

3) Given  $g(x) = -0.8\sqrt{(2x-4)} + 20$ , for what interval of  $x$  is  $f(x) > 2$ .

Answer: [2, 255.1[

4) Given  $g(x) = 2\sqrt{(x+4)} - 8$ , determine the interval over which the function is positive.

Answer: [12, +∞[

5) Given  $f(x) = 2x - 4$ ,  $g(x) = 3\sqrt{4x + 12} + 1$ , and  $h(x) = f(g(x))$ , determine the vertex of  $h(x)$ .

Answer:  $(-3, -2)$

6) Find the rule of a square root function has a vertex at  $(-4, 8)$  and passes through the point  $(-13, 20)$ .

Answer:  $f(x) = 4\sqrt{-(x + 4)} + 8$

7) Given  $f(x) = 3\sqrt{4x + 2} - 8$ , solve for  $x$  when  $y = -15$ .

Answer: No solution

8) Given  $f(x) = -12\sqrt{2(x + 3)} - 16$ , solve for  $y$  when  $x = 11$ .

Answer:  $y = -79.498$

9) Given  $f(x) = -3x + 30$  and  $g(x) = 12\sqrt{x-4} + 3$ , determine the points of intersection between  $f(x)$  and  $g(x)$ .

Answer (5, 15)

10) Given  $f(x) = 2\sqrt{3x-4} + 8$ , determine  $f^{-1}(x)$  and state the domain and range of  $f^{-1}$ .

Answer  $f^{-1}(x) = \frac{(x-8)^2}{12} + \frac{4}{3}$  Domain:  $[8, +\infty[$  Range:  $\left[\frac{4}{3}, +\infty[$

11) Given  $f(x) = 2\sqrt{x-5}$  and  $g(x) = 4\sqrt{-(x-10)}$  solve for the intersection point(s) between  $f(x)$  and  $g(x)$ .

Answer: (9, 4)

12) Given  $f(x) = a\sqrt{b(x-h)} + k$

where  $a < 0, b > 0, h > 0, k > 0$

Which of the following is true?

- a) The domain is  $]-\infty, h]$
- b) The range is  $[k, +\infty[$
- c) The function does not have a zero
- d) The function does not have a y-intercept

Answer: D is true.