

NAME _____ DATE _____

ALGEBRA II PRACTICE ON FUNCTIONS

1-11. Refer to the functions defined below to answer each question.

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

x	j(x)
-2	8
0	6
3	3
5	0
7	-4

1. Find $f(-3)$.

2. Find $(f + g)(x)$.

3. Find $h(4) - g(7)$.

4. Find $\frac{j(5) - j(-2)}{5 - (-2)}$.

5. Find $[f(-3)]^2$.

6. Find $(f \circ g)(x)$.

7. Find $h(4x - 5)$.

8. Find all zeroes of $j(x)$.

9. Find all values of x such that $f(x) = -12$.

10. Find all zeroes of $h(x)$.

11. Find all zeroes of $f(x)$.

12. Given the function $f(x) = \begin{cases} x^2 + x - 2, & x < 2 \\ |3x - 1|, & x > 5 \end{cases}$, find

a. $f(-1)$.

b. $f(10.2)$.

c. $f(3)$

13-15. Find the domain of each function.

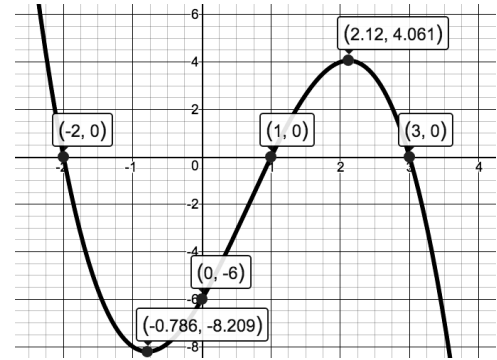
13. $m(x) = \sqrt[5]{4x - 5}$

14. $h(x) = \frac{\sqrt{9 - \frac{1}{2}x}}{x^3 - 9x}$

15. $r(x) = \frac{2}{x^2 + 4} + \frac{1}{\sqrt{x - 2}}$

16. The graph of the function $p(x)$ is shown.

Graph of $p(x)$



- Is $p(x)$ a one-to-one function?
- Is $p(x)$ an onto function?
- What are the zeroes of $p(x)$?
- On what interval(s) is $p(x)$ decreasing?
- On what interval(s) is $p(x)$ positive?
- On what interval(s) is $p(x)$ non-negative?
- What is/are the relative maximum value(s) for $p(x)$?
- What is the absolute maximum value for $p(x)$?
- What is the value of $p(-1)$?
- What is the domain of the function $y = \frac{1}{p(x)}$?
- What is the domain of the function $y = \sqrt{p(x)}$?
- What is the average rate of change from $x = -2$ to $x = 0$?

17. Let $f(x) = 3 - 2x$ and $g(f(x)) = 2x^3 - 3x + 5$. Find $g(7)$. Hint: the answer is NOT 670.

$$18. \text{ Given } y = \begin{cases} 2x-3, & x \leq -4 \\ 5, & -2 < x \leq 3 \\ x^2-5, & x \geq 3 \end{cases},$$

a. Find y when $x = 0.465$.

b. Find y when $x = -2.5$.

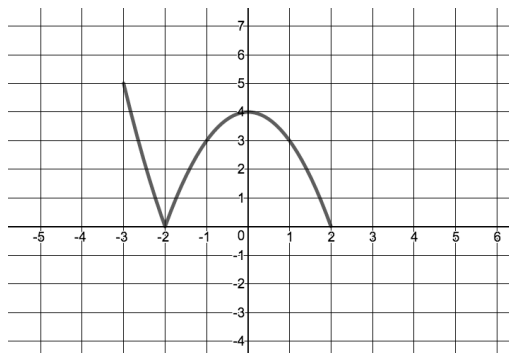
c. Is it a function or not? Explain your answer in complete sentences.

19-21. Find the inverse of each function.

19. $g(x) = 3x + 7$

20. $h(x) = x^2 - 5$

21.



22. Graph the piecewise function $t(x) = \begin{cases} -x-3, & x < -2 \\ 4, & -2 \leq x \leq 2 \\ \frac{1}{2}x+3, & x > 2 \end{cases}$ on the axes provided.

