Algebra III: Blizzard Bag #3

Functions

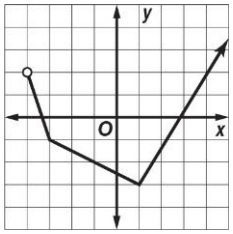
- Students need to complete the following assignment, which will aid in review for the end of course exam.

- Look back on previous notes from the sections covered, if you need assistance completing the work.

- ALL of the problems need to be completed.

Chapter 1: Functions

1. State the domain and range of the function shown.



2. Given $f(x) = 2x^2 - x$, find $f(x + h)$.

3. Find the zero of $f(x) = 4x + \frac{2}{3}$.

4. Find $f(-7)$ for $f(x) = \begin{cases} -|2x - 1| \text{ if } x < -3 \\ x^3 \text{ if } x \geq -3 \end{cases}$.

5. Determine whether the graph of $x = 5y^2 - 2$ is symmetric with respect to the *x*-axis, the *y*-axis, or the origin.

6. Determine whether the function $f(x) = \frac{x}{x^2 - 4}$ is *even*, *odd*, or *neither*.

7. Determine whether $f(x) = \frac{x^2+9}{x^2+3}$ is continuous at $x = -3$. If discontinuous, identify the type of discontinuity as *infinite*, *jump*, or *removable*.

8. Describe the end behavior of $g(x) = -3x^4 - 2x$.

9. PERSONNEL The owner of a farm has 30 regular workers who each bring the farm a profit of $200 per day. For each additional worker hired, this profit decreases by $2.75 per day. How many additional workers should the owner hire to maximize profits?

NAME _____ DATE _____ PERIOD _____

10. Use transformations of the parent graph of $m(x) = \sqrt{x}$ to sketch the graph of $p(x) = -\sqrt{x} - 3$.

11. Describe the transformations relating the graph of $g(x) = \frac{1}{2}(x - 3)^2$ to the graph of its parent function $f(x) = x^2$.

12. Graph $f(x) = |x^3 - 2|$.

13. If $f(x) = x - 3$ and $g(x) = \frac{1}{x^2-9}$, find $(f \cdot g)(x)$ and its domain.

14. If $f(x) = x - 3$ and $g(x) = \frac{1}{x^2-9}$, find $[g \circ f\,](x)$.

15. Find the inverse of $f(x) = x^3 - 4$.

16. Determine if $f(x) = (x - 1)^2$ is a one-to-one function.