Algebra/Trigonometry Section 2.4b Name:_____

Please do all your work on a separate piece of paper. Please show all setup and work!

Word problem

1. A salesperson receives a monthly salary of $2500 plus a commission of 7% of sales. Write a linear equation for the salesperson's monthly wage W in terms of the monthly sales S.

Determine whether the equation represents y as a function of x.

2. $y = |4 - x|$

Evaluate the function at each specified value of the independent variable and simplify.

3. $V(r) = \frac{4}{3}\pi r^3$

   a. $V\left(\frac{3}{2}\right)$ b. $V(2r)$

Find all the real values of x such that $f(x) = 0$

4. $f(x) = 5x + 1$

Determine the domain and range of the function.

5. $g(x) = \frac{|x-1|}{x-1}$

Find the zeros of the function by factoring.

6. $f(x) = x^3 - 4x^2 - 9x + 36$

Use a graphing utility to approximate the relative minimum/relative maximum of each function.

7. $f(x) = 8x^4 - 3x - 1$

Write the linear function that has the indicated function values.

8. $f(5) = -4, \quad f(-2) = 17$

Graph the function.

9. $f(x) = \begin{cases} x^2 + 5, x \leq 1 \\ -x^2 + 4x + 3, x > 1 \end{cases}$

Plot the points to represent $f(x)$ and connect with lines. Then describe and sketch the following transformations.

Points: $(-2,4), (0,3), (1,0), (3,-1)$

10. $y = f(x) - 1$
11. $y = f(x - 1)$
12. $y = f(-x)$

Describe the transformations that occur in the function from the base graph. Then sketch its graph.

13. $f(x) = 4 - x^2$
14. $f(x) = -|x| - 2$
15. $f(x) = \sqrt{x + 7} - 2$

Write the equation of the function with the following information.

16. A basic quadratic function, but moved 2 units to the right and 8 units down.
17. A basic cubic function, but reflected in the x-axis and moved 13 units to the right.
18. A basic square root function, but reflected in the y-axis and moved 4 units down.