Algebra/Trigonometry Section 2.3b Name:_____

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

Find the slope-intercept form of the equation of the line that passes through the given point and has the indicated slope.

1. Point: $(-2,5)$ Slope: $\frac{3}{4}$
2. Point: $(-2,5)$ Slope: undefined

Find the slope-intercept form of the equation of the line passing through the points.

3. $f(1) = 4, \quad f(0) = 6$
4. $f(3) = 9, \quad f(-1) = 11$

Write the slope-intercept forms of the equations of the lines through the given point (a) parallel to the given line and (b) perpendicular to the given line.

5. Point: $(2,5)$ Line: $x = 4$

Word problem

6. A small college had 2546 students in 1998 and 2702 students in 2000. If the enrollment follows a linear growth pattern, how many students will the college have in 2004?

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

7. $q(x) = \frac{1}{x^2-9}$ a. $q(0)$ b. $q(3)$ c. $q(y+3)$

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

8. $f(x) = \frac{12-x^2}{5}$

Find the values of x for which $f(x) = g(x)$

9. $f(x) = \sqrt{3x} + 1, \quad g(x) = x + 1$

Determine the domain and range of the function.

10. $f(x) = x^3 - 3x + 2$
11. $f(x) = \frac{1}{2}|x - 2|$

Find the zeros of the function by factoring.

12. $f(x) = 3x^2 + 22x - 16$
13. $f(x) = 4x^3 - 24x^2 - x + 6$

Determine the intervals over which the function is increasing, decreasing, or constant and identify the relative minimum/relative maximum of the function.

14. $f(x) = x^2 - 4$
15. $f(x) = x^{\frac{2}{3}}$
16. $f(x) = x^3 - 3x^2 - x + 1$

Graph the function.

17. $f(x) = \begin{cases} 3x + 3, x < 0 \\ 3 - x, x \geq 0 \end{cases}$

Determine whether the function is even, odd, or neither.

18. $f(x) = x^6 - 2x^2 + 3$