Name: _____

Instructions: No calculators! Answer all problems in the space provided! Do your rough work on scrap paper.

1. Complete the following rules:

    (a) $x^a \cdot x^b =$ _____   (b) $x^{a/b} =$ _____   (c) $x^{-n} =$ _____   (d) $\frac{x^a}{x^b} =$ _____

    (e) $a^2 - b^2 =$ _____   (f) $a^3 - b^3 =$ _____

2. Suppose m_1 and m_2 are the slopes of two non-vertical lines. What is the relationship between their slopes if:

    (a) They are parallel: _____   (b) They are perpendicular: _____

3. Suppose (x_1, y_1) and (x_2, y_2) lie on a straight line. For this line:

    (a) Write down the *slope-intercept form* **equation** of the line: _____

    (b) Write down the *point-slope form* **equation** of the line: _____

    (c) Write an **equation** that gives its slope: _____

4. Find the equation of the line that passes through $(3, -1)$ having the following features:

    (a) Slope = 3: _____   (b) vertical: _____

    (c) Horizontal: _____   (d) perpendicular to $2x + 3y = 1$: _____

5. Graph $4x + 3y = -12$, indicate two points on the graph:

6. Identify the given functions as "odd", "even" or "neither" by filling out the table. Also state what kind of symmetry the function has. If it is neither even nor odd, enter "N/A" in the symmetry column.

Function	Odd/Even/Neither?	Symmetric about...?
$f(x) = \frac{x}{x^5+x}$		
$f(x) = 2x^5 - 3x^3 + x$		
$f(x) = 2x - x^2$		

Bonus (after attempting the problems above, do these for extra credit)**:**

1. Let $f(x) = \begin{cases} 1 + x^2, & x \le 0 \\ 2 + 3x, & 0 < x < 2 \\ 7, & 2 \le x < 4 \\ 1 - x, & x > 4 \end{cases}$. Evaluate $f(x)$ at the indicated x-values:

    (a) $f(3) =$ _____   (b) $f(4) =$ _____   (c) $f(5) =$ _____