NAME _____ PERIOD _____ DATE _____

Relations and Functions

State the domain and range of each relation. Then state whether the relation is a function. Write yes or no.

1. $\{(-1, 2), (3, 10), (-2, 20), (3, 11)\}$

2. $\{(0, 2), (13, 6), (2, 2), (3, 1)\}$

3. $\{(1, 4), (2, 8), (3, 24)\}$

4. $\{(-1, -2), (3, 54), (-2, -16), (8, 81)\}$

Determine whether the graph of each equation is symmetric with respect to the x-axis, the y-axis, the line $y = x$, the line $y = -x$, or none of these.

5. $x + y = 6$

6. $x^2 + y = 2$

7. $xy = 3$

8. $x^3 + y^2 = 4$

9. $y = 4x$

10. $y = x^2 - 1$

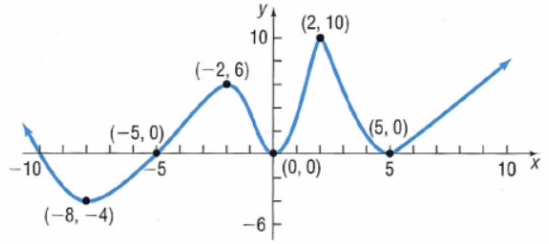
11. Is $f(x) = |x|$ an even function, an odd function, or neither?

Practice Problems for Interval Notation:

Express the following inequalities using interval notation:

1. $\{x \text{ such that } x \leq -10\}$
2. $\{x \text{ such that } x < 3\}$
3. $\{x \text{ such that } x > 6\}$
4. $\{x \text{ such that } x \geq -1/2\}$
5. $\{x \text{ such that } 2 < x < 5\}$
6. $\{x \text{ such that } -12 \leq x \leq -3\}$
7. $\{x \text{ such that } -17 < x \leq 24\}$
8. $\{x \text{ such that } 125 \leq x < 400\}$
9. $\{x \text{ such that } x \neq -0.40\}$
10. $\{x : x \neq -2 \text{ and } x \neq 2\}$
11. $\{x : x < -4 \text{ or } x \geq 3\}$
12. $\{x : x \leq 7 \text{ or } 10 < x < 12)$

In problems 1-8, use the given graph of the function f.



1	Is f increasing on the interval $(-8,-2)$?
2	Is f increasing on the interval $(2,10)$?
3	List the interval(s) on which f is increasing. Justify your answer.
4	List the interval(s) on which f is decreasing. Justify your answer.
5	List the value(s) of x at which f has a local maximum. Justify your answer.
6	List the value(s) of x at which f has a local minimum. Justify your answer.
7	Find the x-intercepts.
8	Find the y-intercepts.