Pre-Calculus Name: Date: Period:

Assignment 1B: Domain, Range, & Intervals

For 1-5, represent each set of numbers using (a) a line graph, (b) Set-builder notation, and (c) interval notation. (Hint: try testing a range of x-values to get an idea of the set you are looking for. Use a graphing calculator if necessary.)

1. The set of all x-values such that $y = x^2 + 1$ is positive.

2. The set of all x-values such that $y = \sqrt{x}$ is a real number.

3. The set of all x-values such that $y = 1 - |x|$ is positive.

4. The set of all x-values such that $y = 1 - |x|$ is negative.

5. The set of all x-values such that $y = x^2$ is a positive number
(Note: 0 is neither positive or negative).

6. James has a cell phone plan that includes 250 texts per month but charges $.50 for each text over this limit.
   A. Use set builder notation to describe the set of all possible monthly totals that would not result in extra charges.

   B. Use set builder notation to describe the set of all possible monthly totals that would result in extra charges.

   C. Why does interval notation not work well to describe these sets?

   D. How could you accurately graph the set in part(a)?

7. Cammie has a cell phone plan that includes 250 minutes of calls per month but charges $.50 for any calling time over this limit.

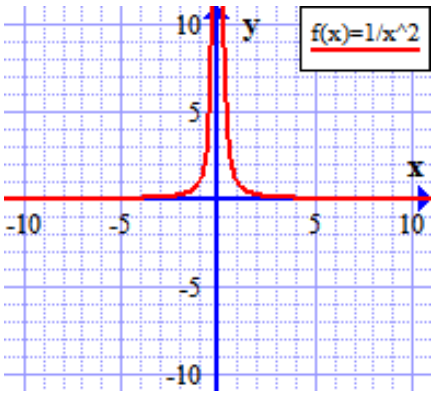
   A. Describe the set of all possible monthly call totals that would not result in extra charges as an interval, set-builder, and graph.

   B. Describe the set of all possible monthly call totals that would result in extra charges as an interval, set-builder, and graph.

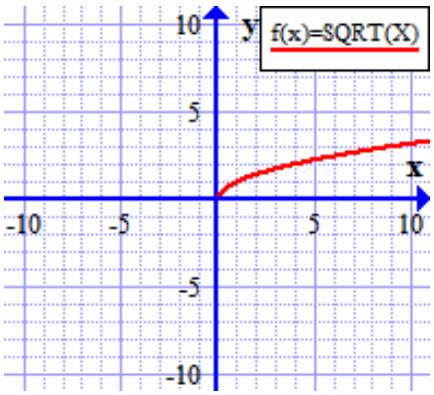
   C. Why does interval notation work well to describe these sets?

8. Use the graphs to describe the domain and range of each function using interval notation.

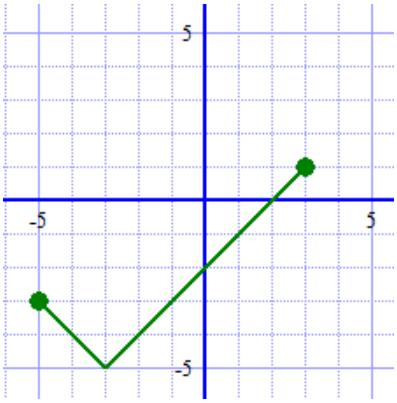
Reciprocal Squared: $f(x) = \frac{1}{x^2}$



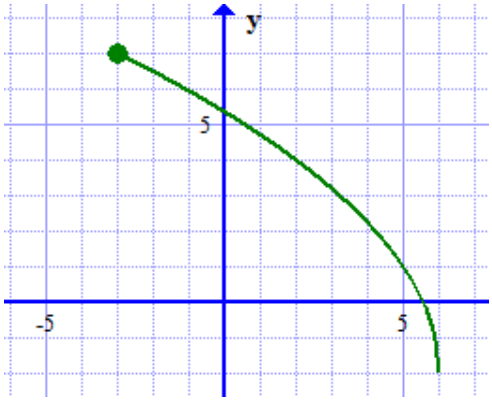
Square Root: $f(x) = \sqrt{x}$



$f(x) = |x + 3| - 5$



$f(x) = 3\sqrt{6 - x} - 2$



State the domain of these functions in interval notation.

9. $y = \sqrt{8 - x}$

10. $y = \sqrt{2x + 6}$

11. $y = \frac{1}{x-6}$

12. $y = \frac{1}{3x-5}$