1A: Intervals

Represent each set of numbers using Set-builder notation, interval notation, and a graph unless instructed otherwise.

1. The set of all numbers such that $x^2 + 1$ is positive.

2. The set of all numbers such that $\sqrt{x}$ is a real number.

3. The set of all numbers such that $1 - |x|$ is positive.

4. The set of all numbers such that $1 - |x|$ is negative.

5. The set of all numbers such that 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?