First Name _____ Last Name _____ Date ___ – ___ – ___ Period _____ Score _____

Learning Objectives.

- To categorize the end behaviors of the graph as approaching an infinity or a horizontal asymptote

- To distinguish the different pace toward infinity

- To represent an interval on the number line and vise versa.

Problem.

1. Shade the segment represented by the interval $(-4, 1]$ on the number line. Use • to indicate a closed endpoint, and ○ to indicate an open endpoint.
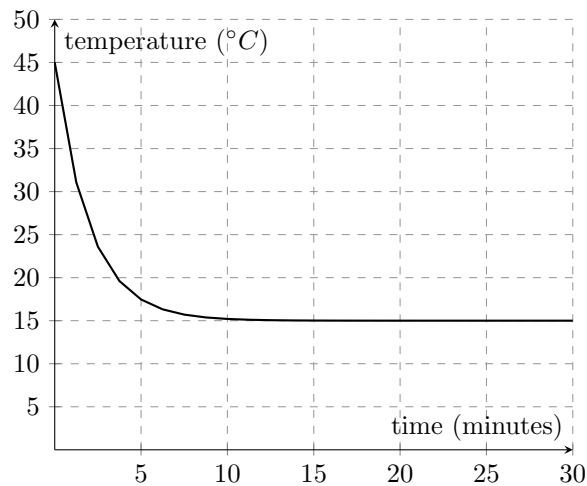
   -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8
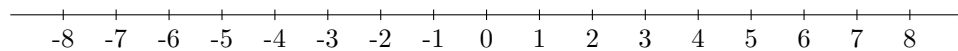
2. Shade the segment represented by the interval $(-\infty, -6]$ on the number line. Use • to indicate a closed endpoint, and ○ to indicate an open endpoint.

   -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8
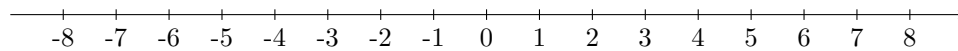
3. The interval represented by the shaded segment below is _____ .

   -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8
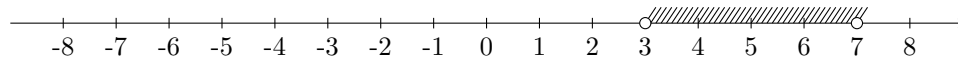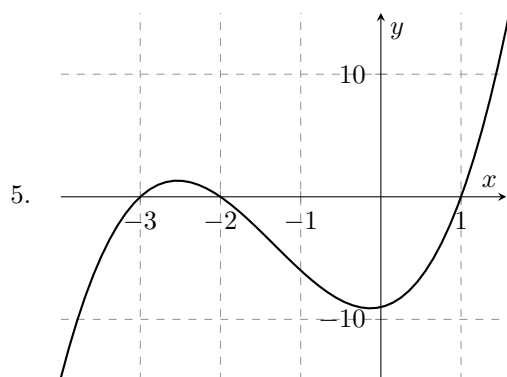
4. The following graph shows the state of an object cooling over time:

   (a) What is the temperature of the object as time approaches infinity?

   (b) What can you infer about the room temperature in which this cooling process was taking place?

Direction. Describe the end behaviors of the graphs below. If the graph doesn't have a definite end behavior, put "N/A".
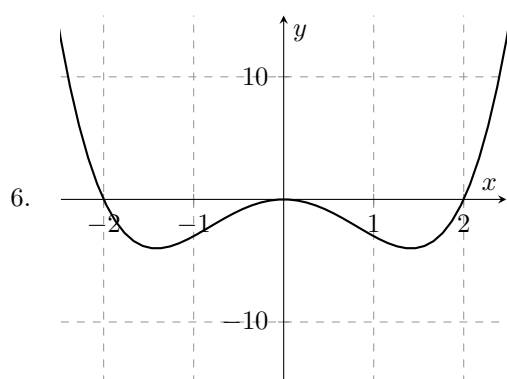
5.

As x approaches ∞, y approaches _____.

As x approaches $-\infty$, y approaches _____.

Does the graph have an absolute maximum? _____.
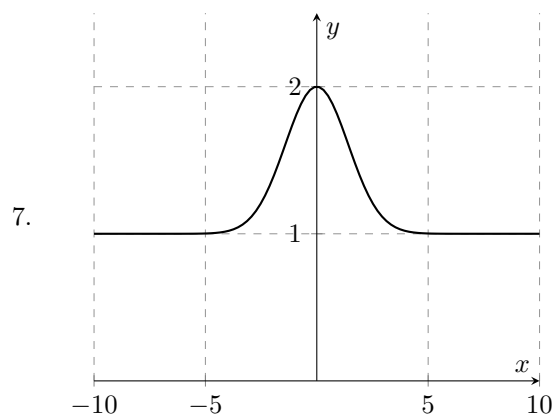
Does the graph have an absolute minimum? _____.

6.

As x approaches ∞, y approaches _____.

As x approaches $-\infty$, y approaches _____.

Does the graph have an absolute maximum? _____.
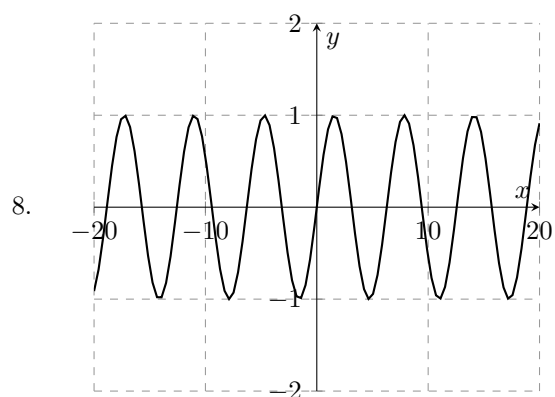
Does the graph have an absolute minimum? _____.

7.

As x approaches ∞, y approaches _____.

As x approaches $-\infty$, y approaches _____.

Does the graph have an absolute maximum? _____.

Does the graph have an absolute minimum? _____.

8.

As x approaches ∞, y approaches _____.

As x approaches $-\infty$, y approaches _____.

Does the graph have an absolute maximum? _____.

Does the graph have an absolute minimum? _____.