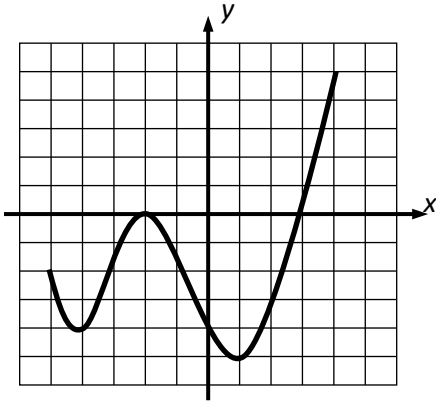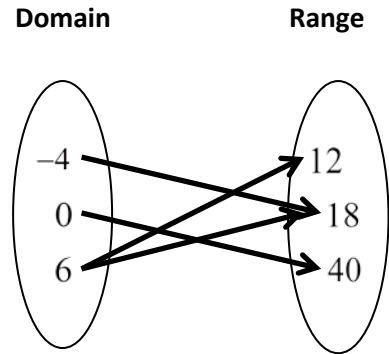1. In each of the following, state the domain and range; then decide if it's a function or not. Be sure to explain using words such as input, output, domain and range!
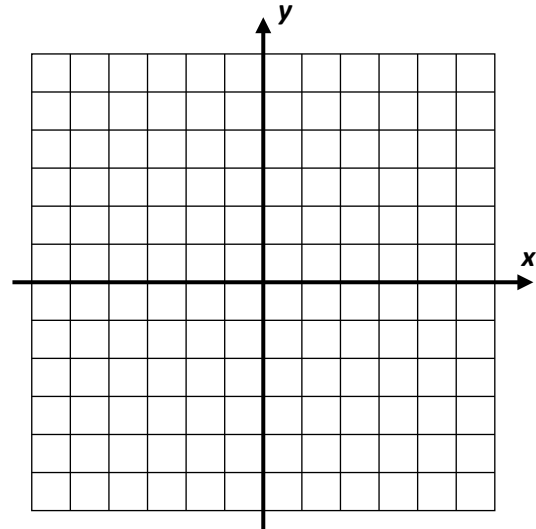
   (a)

   (b)

   Domain   **Range**

2. Consider the piecewise linear function given by the formula $f(x) = \begin{cases} 2-3x & -1 \le x \le 1 \\ x-2 & 1 < x \le 3 \end{cases}$. Determine the function's domain and range. Draw a graph of the function to fully justify your answer.

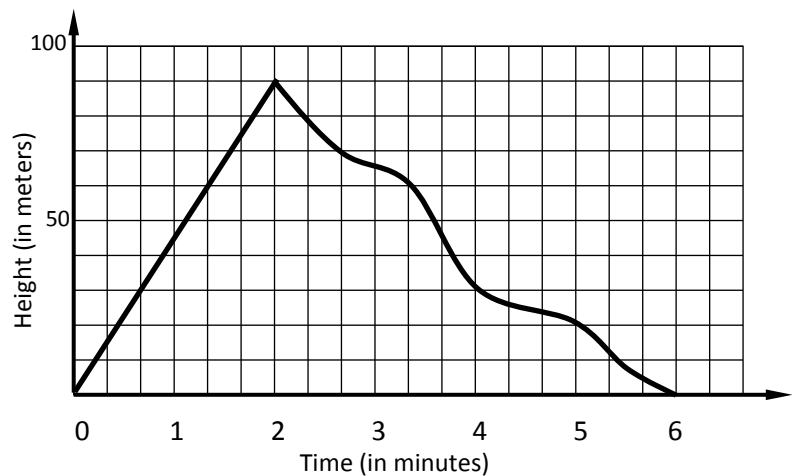   Use tables on your calculator to help graph.

3. The following graph represents the height above the ground versus time at a resort as Thomas rides his favorite ski slope.

   (a) State the domain and, in your own words, what the domain represents.

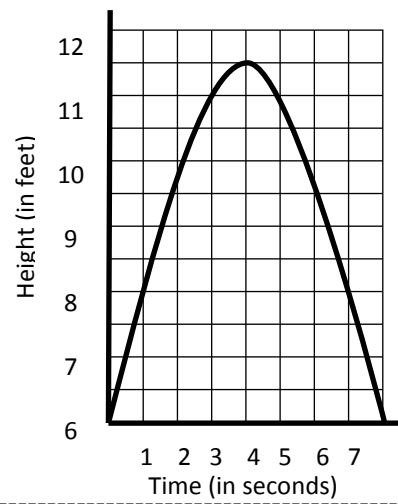   (b) State range and, in your own words, what the range represents.

   (c) What might Thomas have been doing for the interval $0 \le t \le 2$? What was his average rate of change? Use proper units in your answer.

   (d) What might Thomas have been doing for the interval $2 \le t \le 6$? What was his average rate of change? Use proper units in your answer and compare to what you found in (c).

4. The graph below represents the height of a ball over the interval $0 \le t \le 8$. After how many seconds was the ball 12 feet off of the ground? Explain your answer.

What does your answer indicate about the **range** of this function?

Height (in feet)

Time (in seconds)

R1. If 3x + 1 represents an odd integer, represent the next consecutive odd integer in terms of x.

R2. In a supermarket, the regular size of CleanRight cleanser contains 14 ounces and costs 49 cents. The giant size contains 20 ounces and costs 66 cents.
   a.   Find, to the *nearest tenth* of a cent, the cost per ounce for the regular can.
   b.   Find, to the *nearest tenth* of a cent, the cost per ounce for the giant can
   c.   Which is the better buy? Justify your answer.
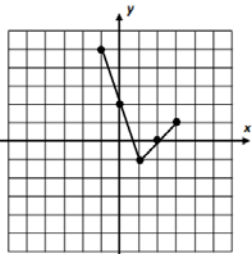
R3. The chart compares two runners. Based on the information in this chart, state which runner has the faster rate.   Justify your answer.

Runner	Distance, in miles	Time, in hours
Greg	11	2
Dave	16	3

R4. Evaluate $2a^2 + b$ if $a = -3$ and $b = 1$

R5. Subtract $3x^2 - 7x + 9$ from the product of $2x - 3$ and $2x - 4$.

R6. If $r = \dfrac{1}{4}$, which of the following has the greatest value?

   (1) $\sqrt{r}$ (2) r   (3) r^2 (4) r^3

1a. Yes
   Domain $-5 \le x \le 4$
   Range $-5 \le y \le 5$
1b. No
   Domain -4, 0, 6
   Range 12, 18, 40
2.   Domain $-1 \le x \le 3$
   Range $-1 \le y \le 5$

3a. [0, 6], Amount of time it takes to ride up in the chair lift and ski down the mountain.

3b. [0, 90], Thomas goes from sea level (0 meters) to 90 meters above sea level.
3c. Riding the chair lift. 45 meters per minute.
3d. Skiing down the mountain. 22.5 meters per minute. Thomas skied down the mountain slower than he rode up in the chair lift.
4. Never, the range does not include 12 feet.

R1. 3x+3
R2. a. 3.5₵
      b. 3.3₵
      c. Giant Can is 0.2₵ cheaper
R3. Greg is the faster runner at 5.5 miles per hour compared to Dave's 5.3 miles per hour.
R4. 19
R5. $x^2 - 7x + 3$
R6. (1)