FPC – 10

4.5 – Properties of Linear Relations

1. The cost of a car rental is $60, plus $20 for every 100km driven. The *independent* variable, *d*, is the distance driven and the *dependent* variable, *C*, is the total cost.

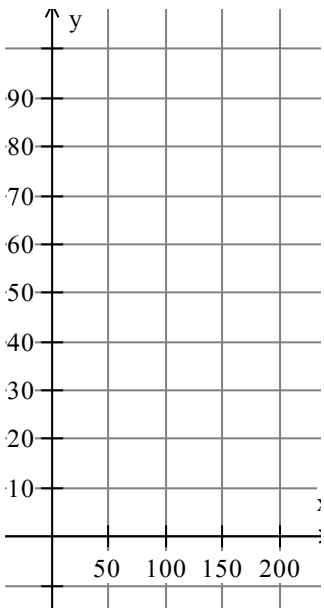
We can represent this relation in a number of different ways:

A. Table of Values

Distance (km)	Cost ($)
0	
50	
100	
150	
200	

B. Set of Ordered Pairs

C. Graph



What do you notice about the graph?

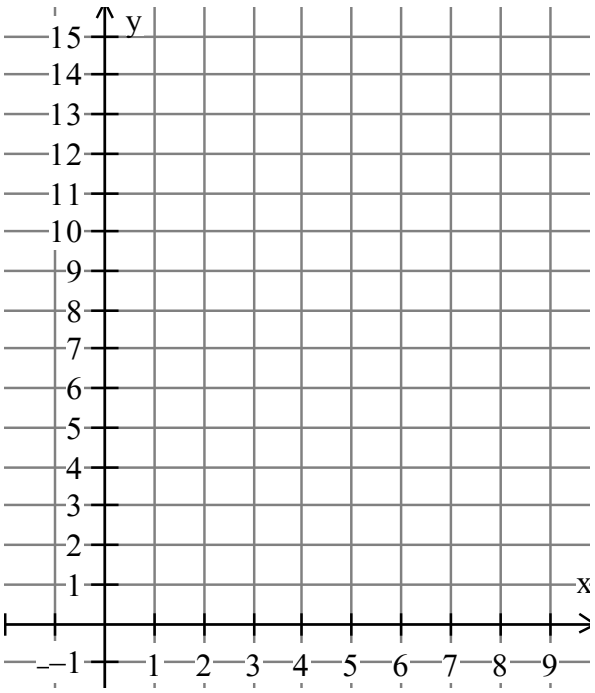
D. Equation

2. A baseball is thrown in the air from a height of 5 feet. The height, h, of the baseball at time, t seconds is given by the equation, $h = -x^2 + 6x + 5$.

A. Table of Values

Time, *t*	**Height, *h***
0	
1	
3	
5	
7	

B. Graph

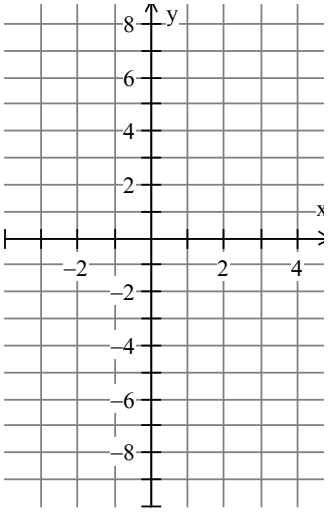


What do you notice about the graph?

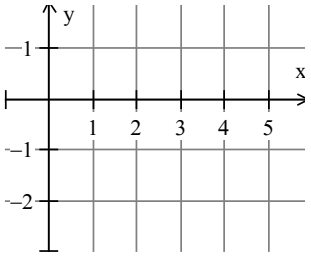
What do you notice about the equation of this relation compared to the equation of the relation from question 1?

3. For each of the following, determine whether the relation is *Linear* or *Non-Lin*ear. If the relation is Linear, determine its ROC (show your work clearly).

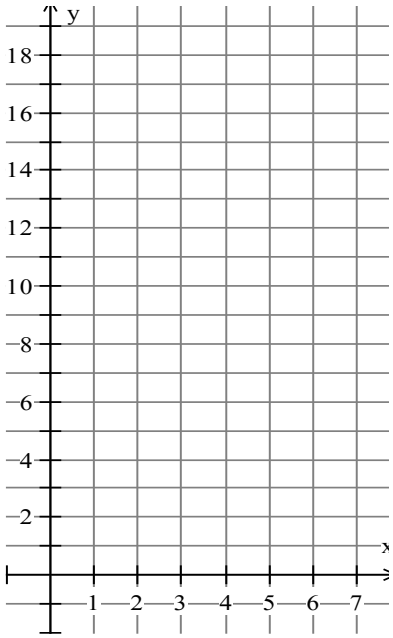
x	*y*
-2	*7*
0	*1*
2	*-5*
3	*-8*



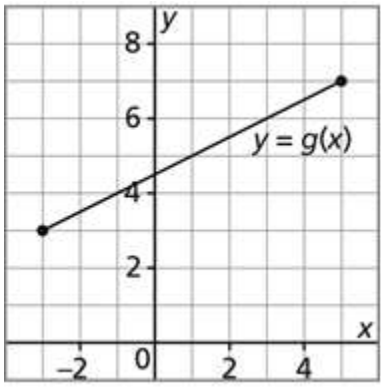
x	*y*
0	*-2*
1	*-1.5*
4	*0*
5	*0.5*

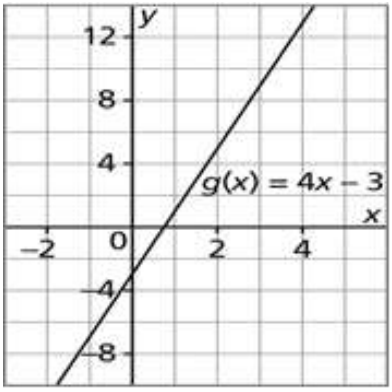


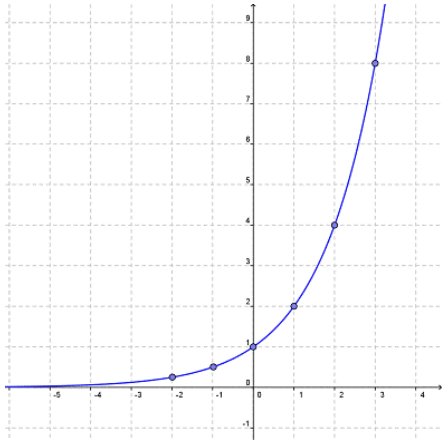
x	*y*
1	*3*
3	*8*
6	*14*
7	*18*

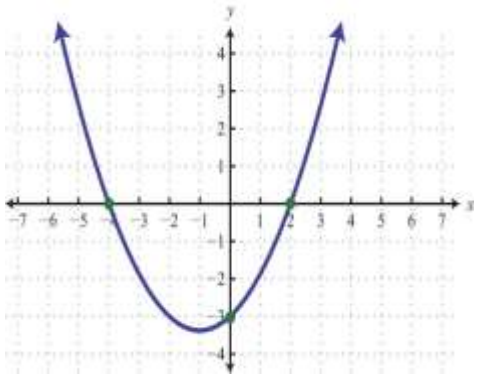


4. For each of the following, determine whether the relation is *Linear* or *Non-Lin*ear. If the relation is Linear, determine its ROC (show your work clearly).









5. For each of the following, determine whether the relation is *Linear* or *Non-Line*ar. If the relation is Linear, determine its ROC (show your work clearly).

$y = -\frac{1}{2}x + 2$

$y = -x^2 + 2x + 1$

$y = \sqrt{x-2} + 1$

$y = 1 - 3x$

Conclusions

How can we determine that a relation is **Linear** when the relation is represented in each of the following formats? If the relation is Linear, how do we determine the **ROC** in each representation?

Table of Values

Graph

Equation

Assignment 4.5 – Page 308: #3 – 10, 12 – 15, 17