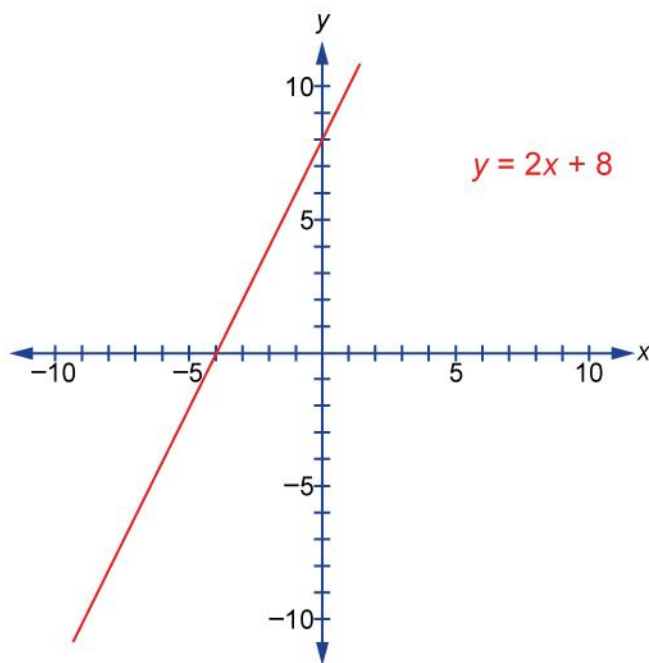


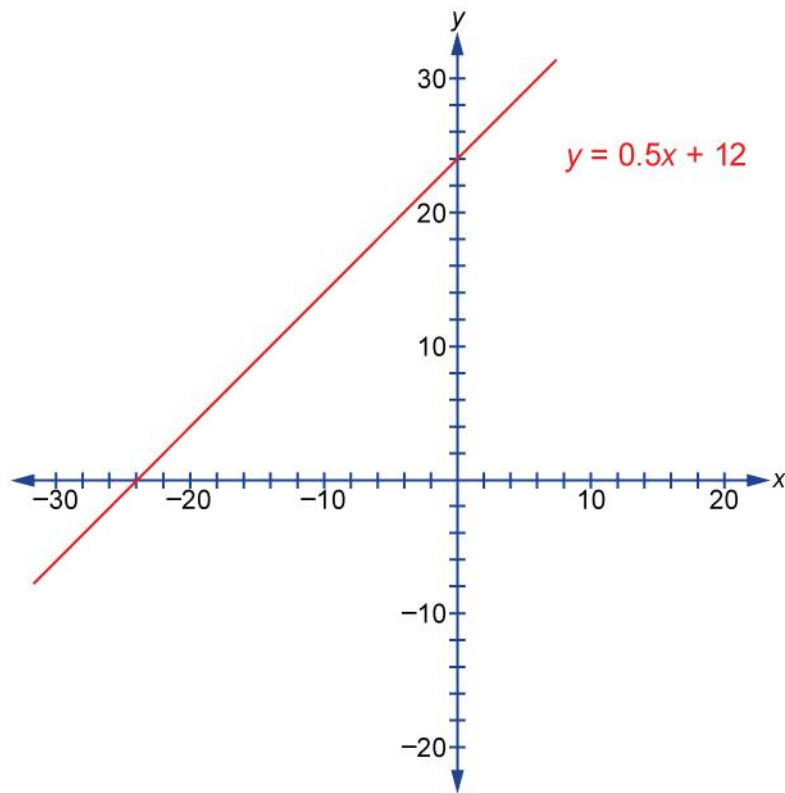
Module 5 Lesson 1

TT 5. *Foundations and Pre-calculus Mathematics 10 (Pearson)*, questions 3, 4, 5, 6, 16, and 17.a) on pages 308 to 310 **Possible Solutions**

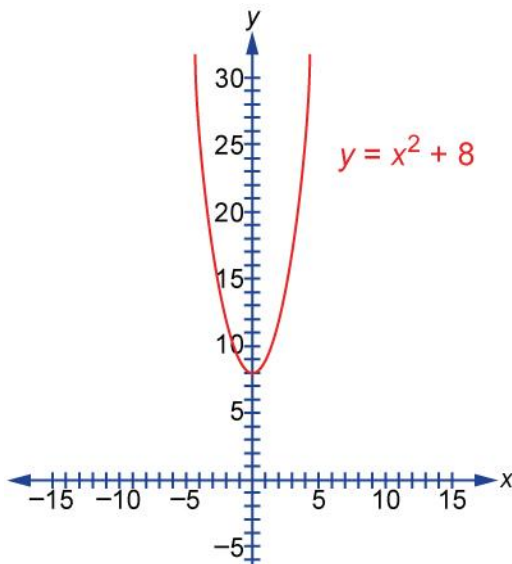
3. a) The table of values is linear since the x -values increase by 2 each time and the y -values increase by 40 each time.
- b) The table of values is non-linear since the y -values are increasing by a different number each time.
- c) The table of values is linear since the x -values decrease by 5 each time and the y -values decrease by 2.5 each time.
- d) The table of values is non-linear since the x -values are increasing by a different number each time.
4. Only 4.a) is a linear relation since it is the only ordered pair that has a constant decrease of 2 units in the y -values for every 2 units increase in the x -values.
5. a) The graph is linear since the graph is a straight line.
- b) The graph is linear since the graph is a straight line.
- c) The graph is non-linear since the points on the graph do not lie in a straight line.
- d) The graph is non-linear since the graph is not a straight line.
6. a) i) The graph should look similar to the following.



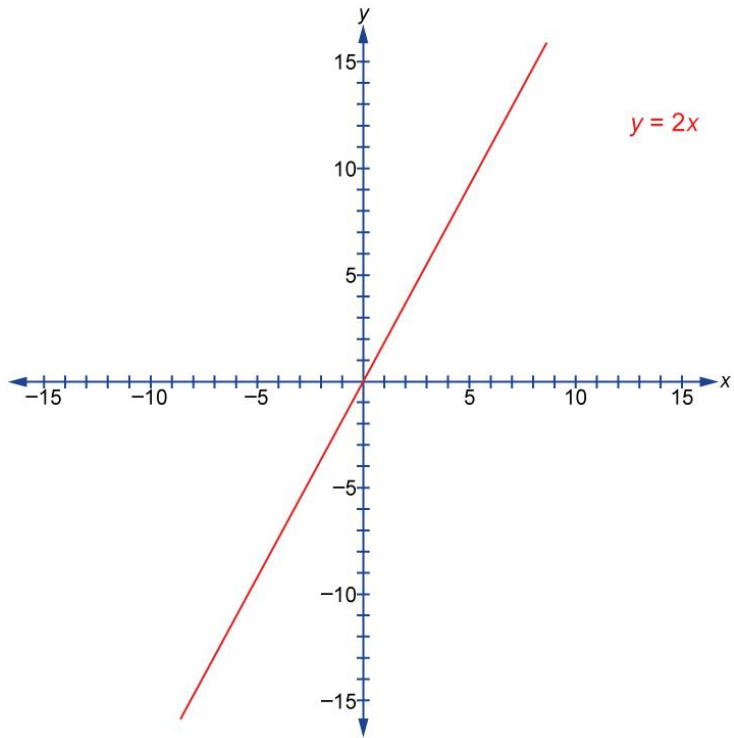
ii) The graph should look similar to the following.



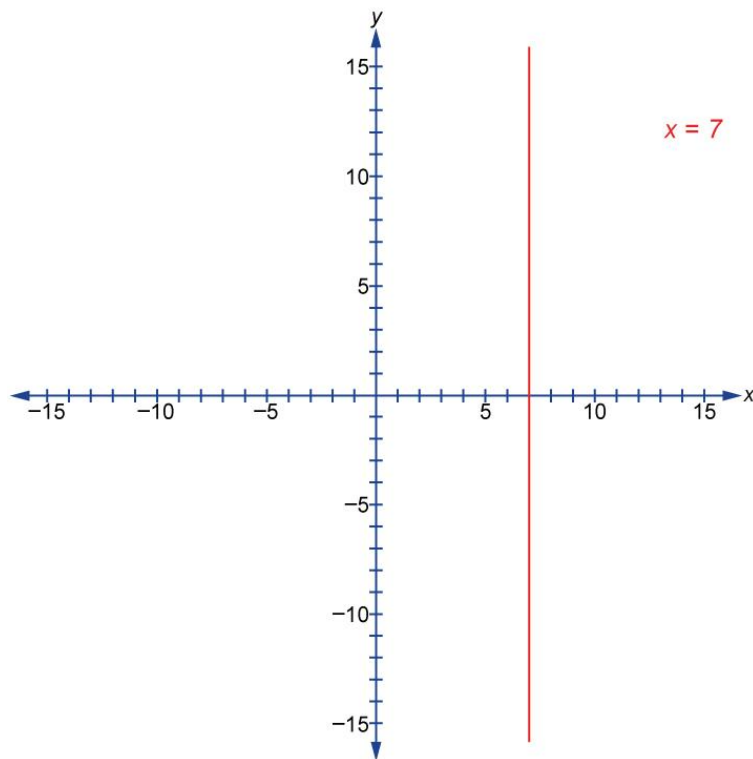
iii) The graph should look similar to the following.



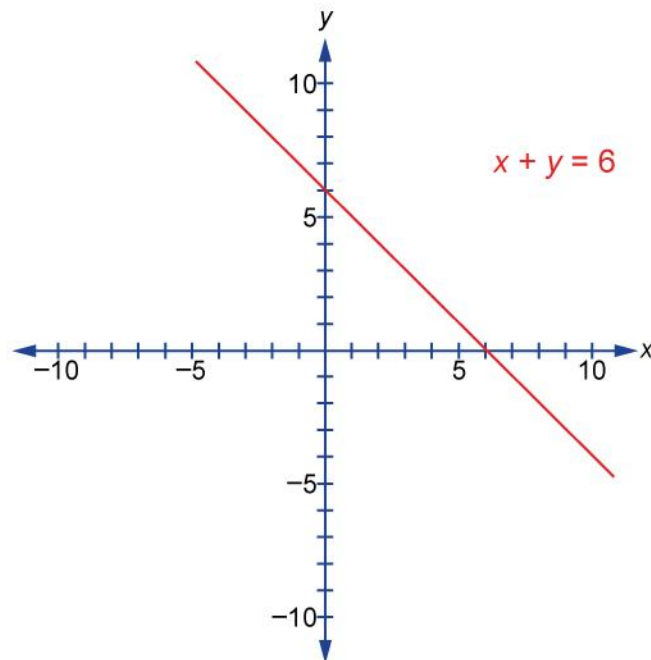
iv) The graph should look similar to the following.



v) The graph should look similar to the following.



vi) The graph should look similar to the following.



b) Equations i), ii), iv), v), and vi) represent linear relations since each equation is a first-degree equation and consists of only one or two variables.

16. a) Equation 3: $y = 20x$ and Set B

b) Equation 1: $y = 500 + 40x$ and Set C

c) Equation 2: $y = 35 - 0.06x$ and Set A

17. a) i) The answer is linear since it is a situation that involves constant change. In this context, the constant is the speed.

ii) Since the population does not increase at a constant rate, this situation is non-linear. In the first hour, 1 becomes 3 (an addition of 2); in the second hour, 3 become 9 (an addition of 6). Since the increase in number of bacteria is not constant, this is not a linear relation.

iii) This situation is linear, since there is a \$2/km constant charge.

iv) Since there is a \$5/yearbook constant charge, the situation is linear.

v) This is a non-linear situation, since the increase of 12% per year does not represent a constant change. For example, assume the initial investment is \$100. The following table shows how the investment grows.

Time (years)	Value of Investment (\$)
0	100
1	$100 \times 1.12 = 112$
2	$112 \times 1.12 = 125.44$
3	$125.44 \times 1.12 = 140.49$

The increase in the first year is \$12, whereas the increase in the next year is \$13.44. Since the change is not constant, this is not a linear relation.

