

Module 6 Lesson 2

TT4: Possible Solutions

TT 4.a. *Foundations and Pre-calculus Mathematics 10* (Pearson), question 11 on page 372

11. To determine the equation, first find the slope. The use one of the points (either will give the same answer) to complete the questions.

a) Step 1:

$$m = \frac{1 - (-5)}{1 - (-2)}$$

$$m = \frac{6}{3}$$

$$m = 2$$

Step 2: Use the point (-2, -5)

$$y - (-5) = 2(x - (-2))$$

$$y + 5 = 2(x + 2)$$

$$y + 5 = 2x + 4$$

$$y + 5 - 5 = 2x + 4 - 5$$

$$y = 2x - 1$$

or Use the point (1, 1)

$$y - 1 = 2(x - 1)$$

$$y - 1 = 2x - 2$$

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

$$y = 2x - 1$$

** Note – you do not have to do both of step 2 – just do one or the other. Both are done here just to show that the same answer is arrived at.

b) Step 1:

$$m = \frac{-2 - 7}{5 - (-4)}$$

$$m = \frac{-9}{9}$$

$$m = -1$$

Step 2: Use (-4, 7)

$$\begin{aligned}y - 7 &= -1(x + 4) \\y - 7 &= -1x - 4 \\y - 7 + 7 &= -1x - 4 + 7 \\y &= -x + 3\end{aligned}$$

or use (5,-2)

$$\begin{aligned}y - (-2) &= -1(x - 5) \\y + 2 &= -1(x - 5) \\y + 2 &= -1x + 5 \\y + 2 - 2 &= -1x + 5 - 2 \\y &= -1x + 3\end{aligned}$$

c) Step 1:

$$\begin{aligned}m &= \frac{8 - (-7)}{2 - (-3)} \\m &= \frac{15}{3} \\m &= 3\end{aligned}$$

Step 2 : use (-3, -7)

$$\begin{aligned}y - (-7) &= 3x + 3 \\y + 7 &= 3x + 3 \\y + 7 - 7 &= 3x + 3 - 7 \\y &= 3x - 4\end{aligned}$$

Or use (2, 8)

$$\begin{aligned}y - 8 &= 3(x - 2) \\y - 8 &= 3x - 6 \\y - 8 + 8 &= 3x - 6 + 8 \\y &= 3x + 2\end{aligned}$$

d) Step 1:

$$m = \frac{-5 - (-1)}{-5 - (-7)}$$

$$m = \frac{-4}{2}$$

$$m = -2$$

Step 2: use (-7,-1)

$$y - (-1) = -2(x - (-7))$$

$$y + 1 = -2x + 7$$

$$y + 1 = -2x - 14$$

$$y + 1 - 1 = -2x - 14 - 1$$

$$y = -2x - 15$$

Or use(-5,-5)

$$y - (-5) = -2(x - (-5))$$

$$y + 5 = -2x + 5$$

$$y + 5 = -2x - 10$$

$$y + 5 - 5 = -2x - 10 - 5$$

$$y = -2x - 15$$

TT 4.b. *Foundations and Pre-calculus Mathematics 10* (Pearson), questions 18 and 19 on pages 389 and 390

18. a) From the graph, the slope is $\frac{2}{3}$. Use the slope and the point (2, 0) in slope-point form to write an equation.

$$y - 0 = \frac{2}{3}(x - 2)$$

$$y = \frac{2}{3}x - \frac{4}{3}$$

b) From the graph, the slope is $-\frac{3}{5}$. Use the slope and the point $(2, -1)$ in slope-point form to write an equation.

$$y - (-1) = -\frac{3}{5}(x - 2)$$

$$y + 1 = -\frac{3}{5}x + \frac{6}{5}$$

$$y + 1 - 1 = -\frac{3}{5}x + \frac{6}{5} - 1$$

$$y = -\frac{3}{5}x + \frac{6}{5} - 1$$

$$y = -\frac{3}{5}x + \frac{6}{5} - \frac{5}{5}$$

$$y = -\frac{3}{5}x + \frac{1}{5}$$

19. a) i)

$$m = \frac{5 - (-7)}{1 - (-3)}$$

$$m = \frac{12}{4}$$

$$m = 3$$

$$y - (-7) = 3(x - (-3))$$

$$y + 7 = 3x + 9$$

$$y + 7 = 3x + 9$$

$$y + 7 - 7 = 3x + 9 - 7$$

$$y = 3x + 2$$

ii)

$$m = \frac{-1 - 3}{5 - (-3)}$$

$$m = \frac{-4}{8}$$

$$m = -\frac{1}{2}$$

$$y - 3 = -\frac{1}{2}(x - (-3))$$

$$y - 3 = -\frac{1}{2}x + 3$$

$$y - 3 = -\frac{1}{2}x - \frac{3}{2}$$

$$y - 3 + 3 = -\frac{1}{2}x - \frac{3}{2} + 3$$

$$y = -\frac{1}{2}x - \frac{3}{2} + \frac{6}{2}$$

$$y = -\frac{1}{2}x + \frac{3}{2}$$

b) i) $y = 3x + 2$
 substitute $x = 0$
 $y = 3(0) + 2$
 $y = 0 + 2$
 $y = 2$

Therefore, another point is (0,2).

ii) $y = -\frac{1}{2}x + \frac{3}{2}$
 substitute $x = 3$
 $y = -\frac{1}{2}(3) + \frac{3}{2}$
 $y = -\frac{3}{2} + \frac{3}{2}$
 $y = 0$

Therefore, another point is (3, 0).