

MPM 1DI - Unit 5

Linear Relations

Day 7

Linear Systems

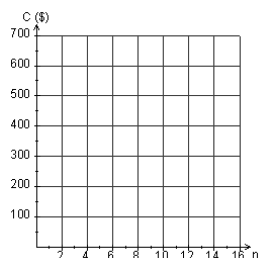
Linear system - a set of two or more linear equations that are considered simultaneously

Point of intersection - the point where two (or more) lines cross

Word Problem: Mike wants to join a ski club for the winter. He is considering the Standard Rate (\$50 per day) and the Frequent Extremist (\$100 registration plus \$40 per day).

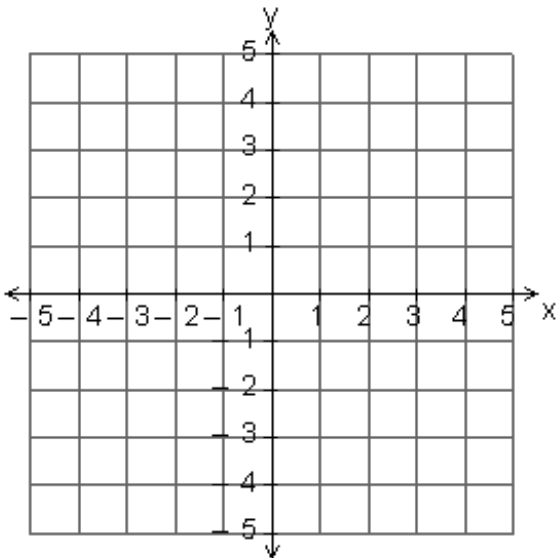
- a. Write an equation that relates the total cost to the number of days for both payment options.

- b. Graph both equations on the same graph.

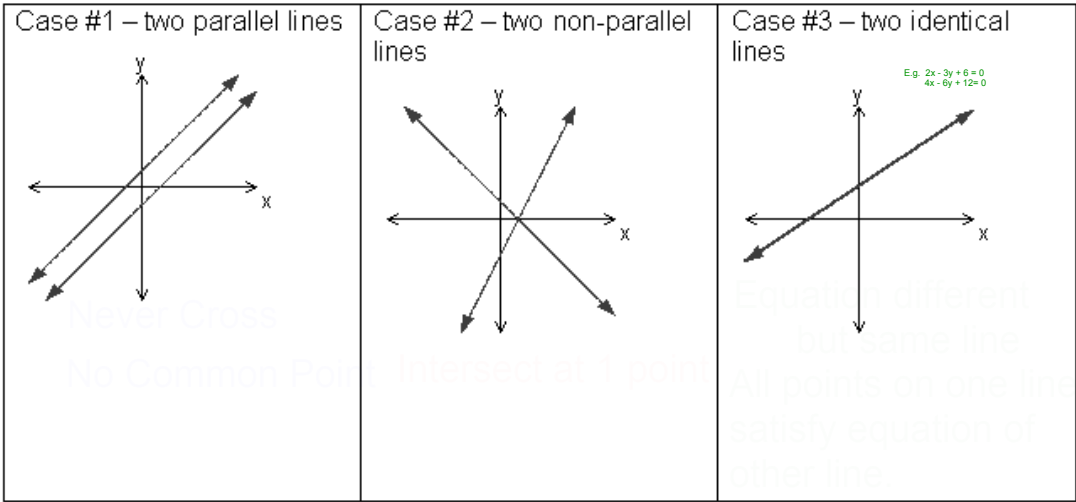


- c. When do both options cost Mike the same amount?
- d. Which payment option should Mike choose?

Example 1 Graph the following lines and identify the point of intersection: $y = -\frac{3}{2}x + 1$ and $x - y = 4$, verify your solution.



Example 2 How many different solutions are there to a linear system of two equations?



No Solution ONE Solution (x, y) Infinite number of Solutions
In this case (1, 0)

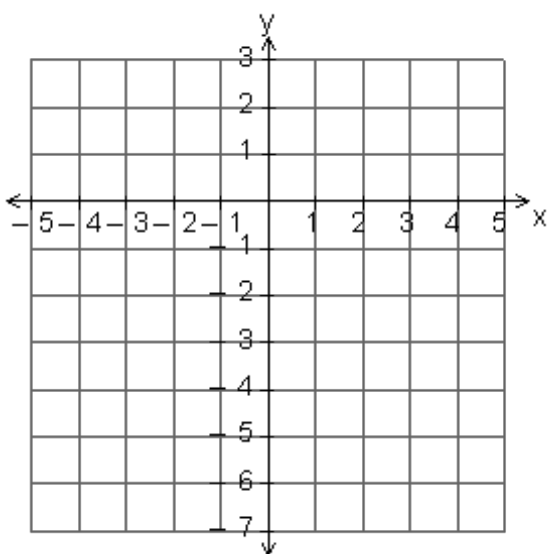
Example 3 How many solutions do the following linear systems have?

a) $y = 4x - 3$ and $y = -\frac{1}{2}x + 1$

b) $y = -5x - 3$ and $y = -5x - 10$

c) $y = x + 1$ and $2x - 2y + 2 = 0$

Example 4 Find the equation of the line that passes through the point of intersection of $y = x - 2$ and $3x - 4y = 12$ and is parallel to $x - 4y + 1 = 0$.



Assigned work

Pg 348-351 # 1, 2, 7, 9, 10, 13, 14