Similar to test Question

A company sells pencils.

Is the following a linear or non-linear relation? Prove

Yes linear since Rate of Change is 0.5 pencils/$

# of Pencil n	Cost ($)
6	10.00
8	11.00
15	14.50
20	17.00
30	22.00

$R = \frac{1}{2} = 0.5$ (2 pencils)

$R = \frac{3.5}{7} = 0.5$ (7 pencils)

$R = \frac{2.5}{5} = 0.5$ (5 pencils)

$R = \frac{5}{10} = 0.5$ (10 pencils)

1.00, 3.50, 2.50, 5.00

Can you connect the dots if you were to draw this on graph paper? No, can't have half a pencil

$$\text{Rate} = \frac{\text{dep change}}{\text{Ind change}}$$

3. Which tables of values represent linear relations? Explain your answers.

a)

Time (min)	Distance (m)
0	10
2	50
4	90
6	130

Linear

b)

Time (s)	Speed (m/s)
0	10
1	20
2	40
3	80

Non Linear

c)

Speed (m/s)	Time (s)
15	7.5
10	5
5	2.5
0	0

Linear

d)

Distance (m)	Speed (m/s)
4	2
16	4
1	1
9	3

Non Linear

Rate = $\frac{-3}{-15} = 0.2$

4. Which sets of ordered pairs represent linear relations? Explain your answers.

a) {(3, 11), (5, 9), (7, 7), (9, 5)}

Linear

x	y
3	11
5	9
7	7
9	5

+2, +2 ... -2

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

b) {(−2, 3), (0, 1), (2, −3), (4, −7)}

+2, +2, +2

Non Linear

−2, −4, −4

c) {(1, 1), (1, 3), (2, 1), (2, 3)}

0, +1, 0

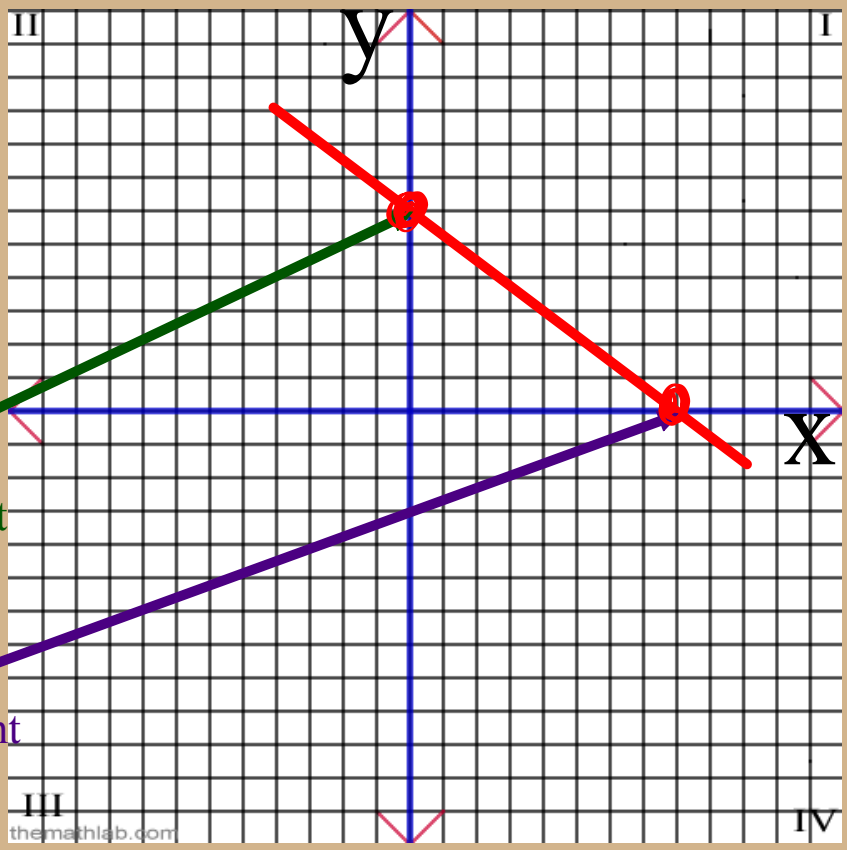
Non Linear

+2, −2, +2

Section 5.7

1

Intercepts

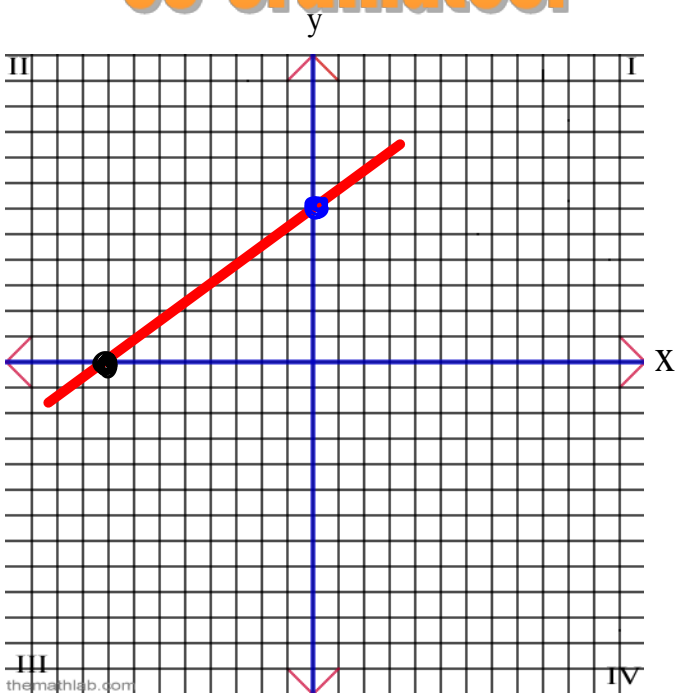


The "y-intercept is the point on the line that crosses the "y" axis. $x = 0$

The "x-intercept is the point on the line that crosses the "x" axis. $y = 0$

2

How do you write the co-ordinates?



y is always zero

x-intercept = -8

$(-8, 0)$

Y = 0 for the x-intercept.

y-intercept = 6

x is always

$(0, 6)$

X = 0 for the y-intercept.

2. Sketch a graph of the linear function $f(x) = 4x - 3$.

rate

y intercept

rate $= \frac{4}{1} = \frac{-4}{-1}$

x	y
-2	-11
-1	-7
0	-3
1	
2	

$x = -2$

$4(-2) - 3$

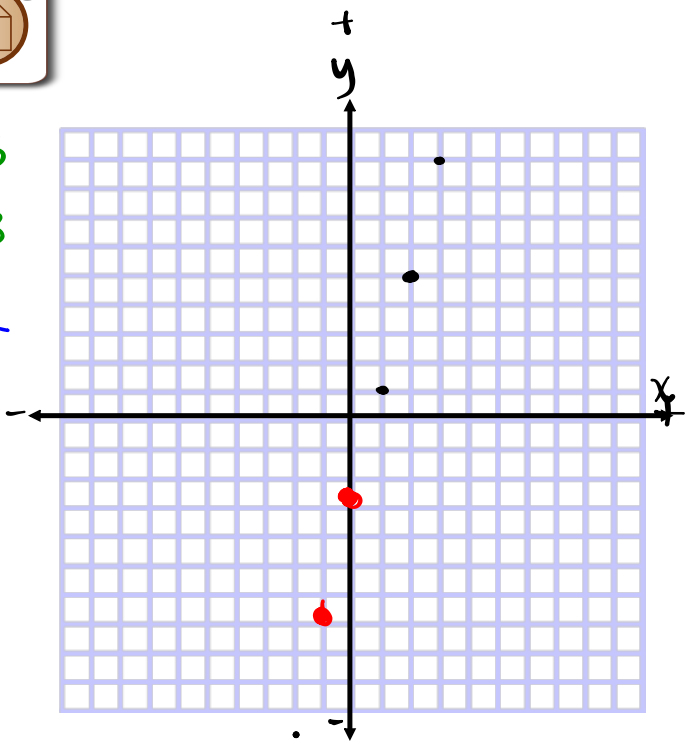
$-8 - 3$

-11

$4(-1) - 3$

$-4 - 3$

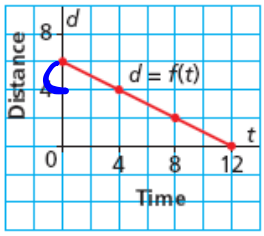
-7



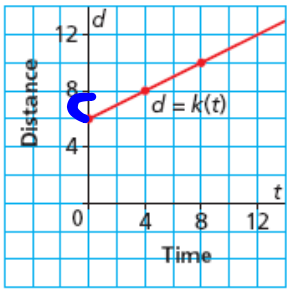
Example 3 Matching a Graph to a Given Rate of Change and Vertical Intercept

Which graph has a rate of change of $\frac{1}{2}$ and a vertical intercept of 6? Justify the answer.

a)



b)



SOLUTION

rate $= \frac{-2}{+4} = \frac{-1}{2} = -0.5$

y-int = 6

(0, 6)

rate $= \frac{+2}{+4} = \frac{1}{2} = 0.5$

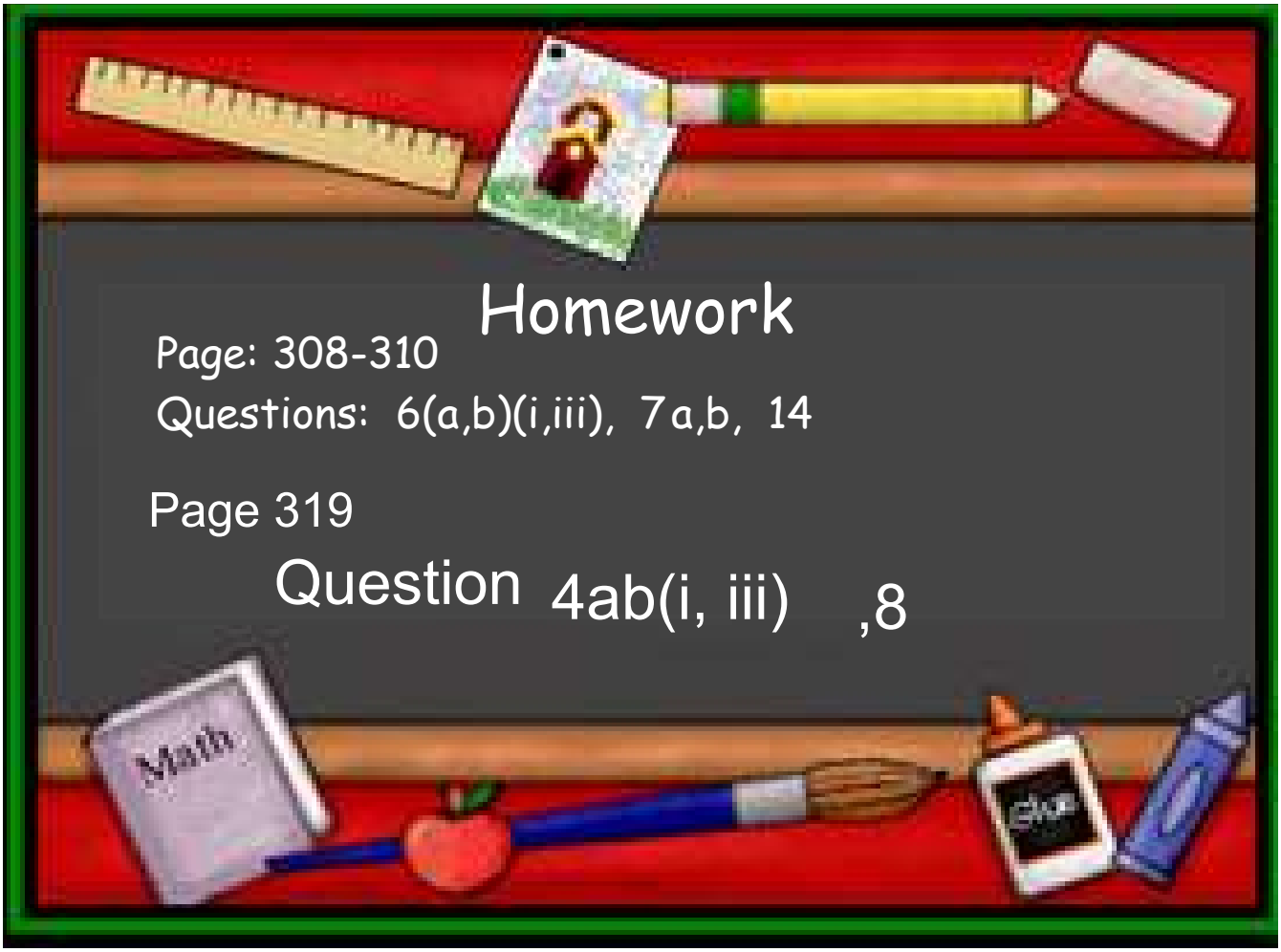
y-int = 6

CHECK YOUR UNDERSTANDING

$y = 2x + 5$

x intercept
$y = 0$

y intercept
$x = 0$


Homework
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Math