MAT 011, Slope (3.4) Name KEY

1. Use the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ to find the slope of the line connecting the points.

a. $(-1,5), (6,-2)$ $\frac{-2-5}{6-(-1)} = \frac{-7}{7} = -1$

b. $(-4,-3), (2,2)$ $\frac{2-(-3)}{2-(-4)} = \frac{5}{6}$

c. $(6,-6), (6,2)$ $\frac{2-(-6)}{6-6} =$ undefined

d. $(0,13), (-4,13)$ $\frac{13-13}{-4-0} = 0$

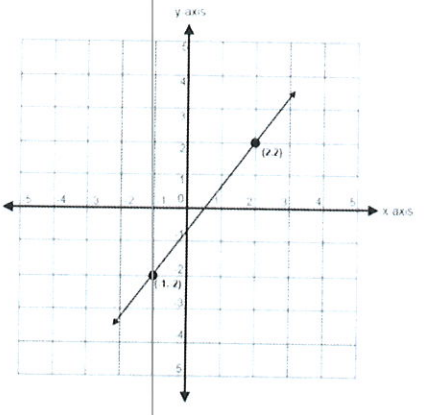
e. $(2008,42.3), (2011,50.8)$ $\frac{50.8-42.3}{2011-2008} = \frac{8.5}{3} \approx 2.83$

f. $(2.1,6.7), (-8.3,9.3)$ $\frac{9.3-6.7}{-8.3-2.1} = \frac{2.6}{-10.4} = -\frac{1}{4}$

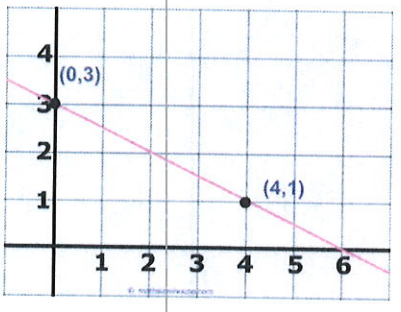
g. $(14.3,-10.1), (9.8,-2.9)$ $\frac{-2.9-(-10.1)}{9.8-14.3} = \frac{7.2}{-4.5} = -1.6 = -\frac{8}{5}$

2. Find the slope of each line (if it exists).

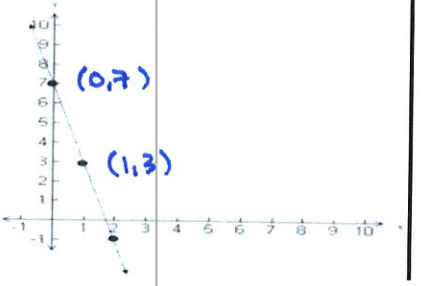
a. $\frac{2-(-2)}{2-(-1)} = \frac{4}{3}$



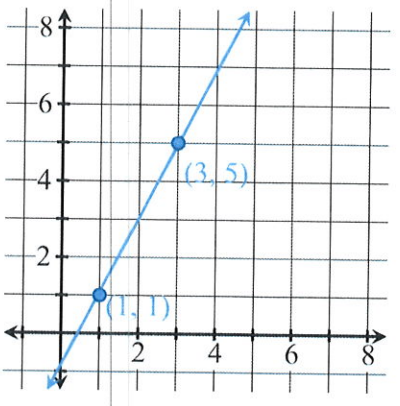
b. $\frac{3-1}{0-4} = \frac{2}{-4} = -\frac{1}{2}$



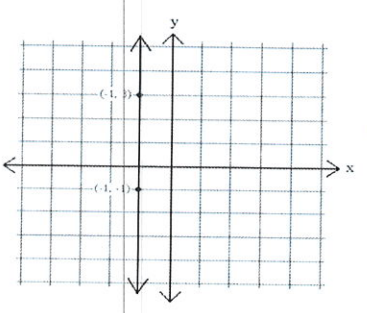
c. -4



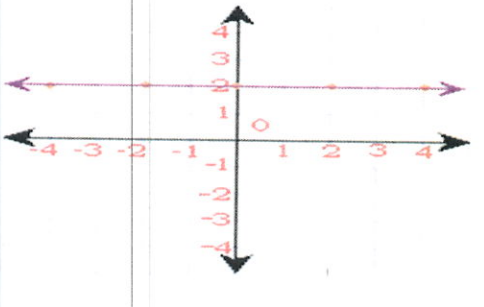
d. $\frac{5-1}{3-1} = \frac{4}{2} = 2$



e. undefined

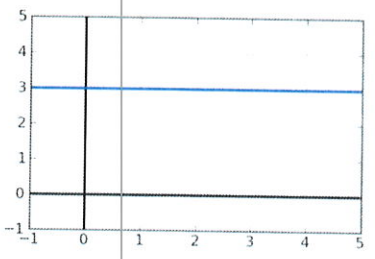


f. 0

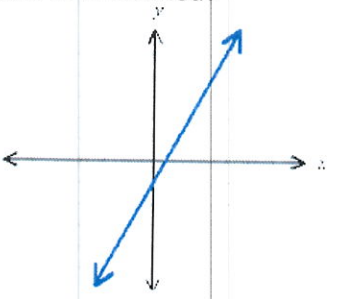


3. Is the slope of the line positive, negative, zero or undefined?

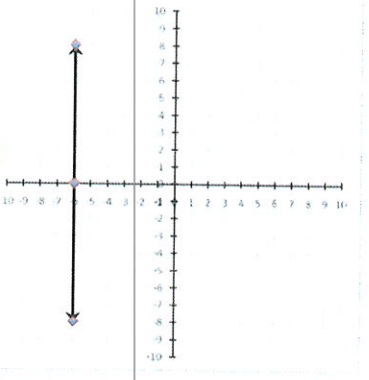
a. zero



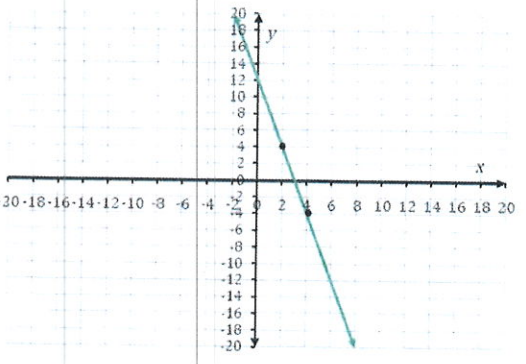
c. positive



b. undefined

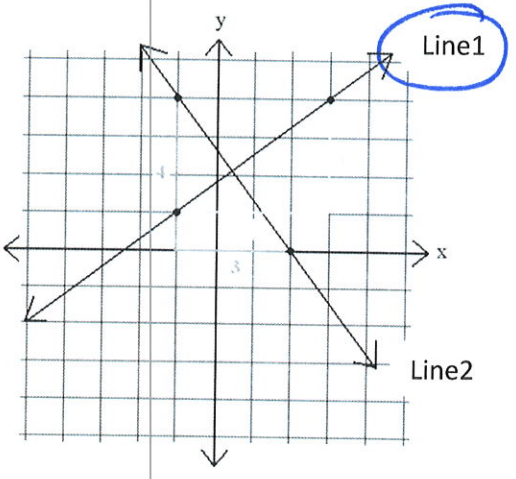


d. negative

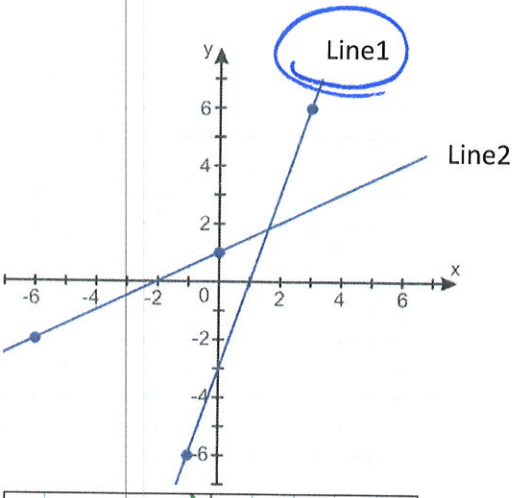


4. Which line has a greater slope?

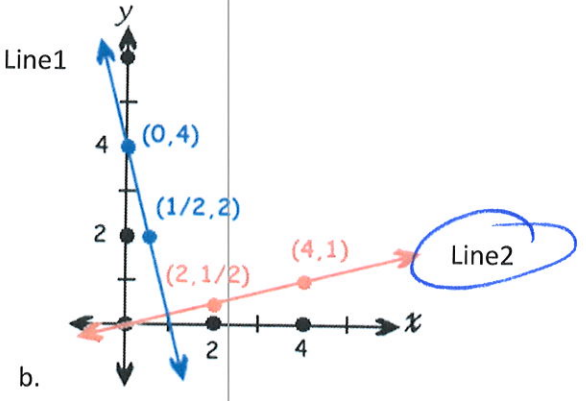
a. Line1



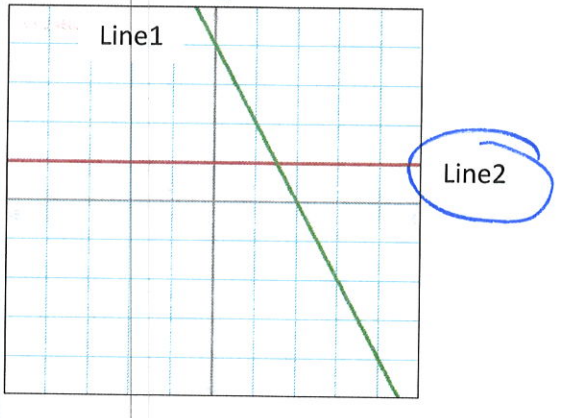
c. Line1



b. Line1



d. Line1



5. What is the slope of each line?

a. $x = 2$ undefined

b. $y = -11$ 0

c. $y = 5x - 2$ 5

d. $3x - 5y = 1$ $\frac{-5y}{-5} = \frac{1-3x}{-5} \Rightarrow y = \frac{3}{5}x - \frac{1}{5}$ $m = \frac{3}{5}$

e. $2x + y = 7$ $y = -2x + 7$ $m = -2$

f. $y = -7.6x + 0.1$ -7.6

g. $x = 5$ undefined

h. $y = 0$ 0

6. Determine whether the lines are parallel or perpendicular or neither.

a. $y = \frac{2}{9}x + 3$ $y = -\frac{2}{9}x$ neither

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

c. $-x + 2y = -2$ $2x = 4y + 3$ parallel

d. $6 + 4x = 3y$ $3x + 4y = 8$ perpendicular

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

$2 + \frac{4}{3}x = y$ $\frac{4y}{4} = \frac{-3x+8}{4} \Rightarrow y = -\frac{3}{4}x + 2$

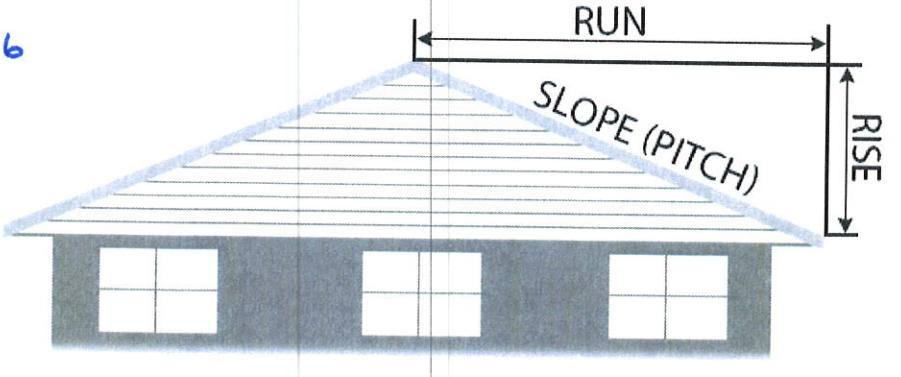
c. $\frac{2y}{2} = \frac{x-2}{2} \Rightarrow y = \frac{1}{2}x - 1$

$\frac{4y}{4} = \frac{2x-3}{4} \Rightarrow y = \frac{1}{2}x - \frac{3}{4}$

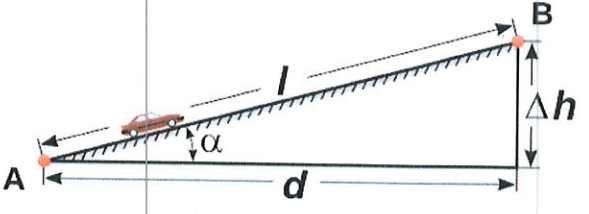
7. Many things in the real world relate to slope: the pitch of a roof and the grade of a road are common examples.

a. A roof rises 6 feet for every 10 feet of width (run). What is the pitch of the roof?

$\frac{6}{10} = \frac{3}{5} = .6$



b. A road rises 16 feet for every 100 feet a car travels horizontally. What is the grade of the road?



$\frac{16}{100} = 16\%$

8. Solve each equation for y. Simplify as much as possible.

a. $y-(-6)=2(x-4)$

$y+6=2x-8$
$-6 \quad -6$
$\Rightarrow y=2x-14$

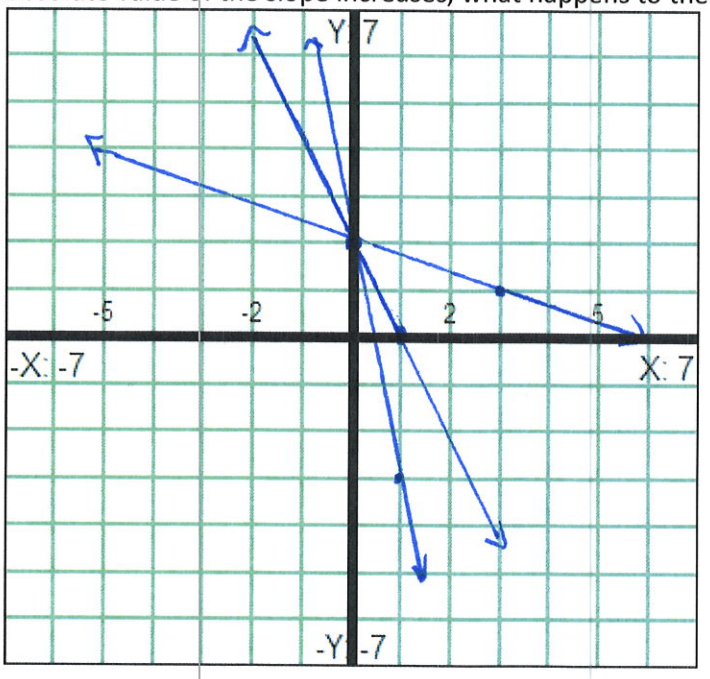
b. $y-7=-9(x-6)$

$y-7=-9x+54$
$+7 \quad +7$
$\Rightarrow y=-9x+61$

c. $y-(-3)=4(x-(-5))$

$y+3=4(x+5)$
$y+3=4x+20$
$-3 \quad -3$
$\Rightarrow y=4x+17$

9. Graph the lines $y=-\frac{1}{3}x+2$, $y=-2x+2$, $y=-4x+2$ on the same graph. As the absolute value of the slope increases, what happens to the graph of the line?



the line gets steeper (more vertical)