

Page 554 #3, 4, 9, 10 WARMUP

Give an equation of each line described.

$$32 \frac{31}{8} - \frac{15}{8} = \frac{17}{8} \quad 15 \frac{1}{8}$$

3. x-intercept = 2; y-intercept = 4

4. x-intercept = 2; y-intercept = -6

9. Slope = $\frac{5}{8}$; passes through (3, 4)

10. Slope = -2; passes through (8, 6)

$$y - 4 = \frac{5}{8}(x - 3)$$

$$-\frac{5}{8}(3)$$

$$y = mx + b$$

$$4 = \frac{5}{8}(3) + b$$

$$y - 4 = \frac{5}{8}x - \frac{15}{8}$$

$$-\frac{15}{8} + \frac{32}{8}$$

$$4 = \frac{15}{8} + b$$

$$4 - \frac{15}{8} = b$$

$$y = \frac{5}{8}x + \frac{17}{8}$$

$$\frac{17}{8} = b$$

SECTION 13.7: **WRITING LINEAR EQUATIONS**

Standards:

REMEMBER

HORIZONTAL LINES

the equation of the horizontal line through the point (h, k) is $y = k$

$y = mx + b$

$(2, -4)$

$y = -4$

VERTICAL LINES

The equation of the vertical line through the point (h, k) is $x = h$

$y = mx + b$

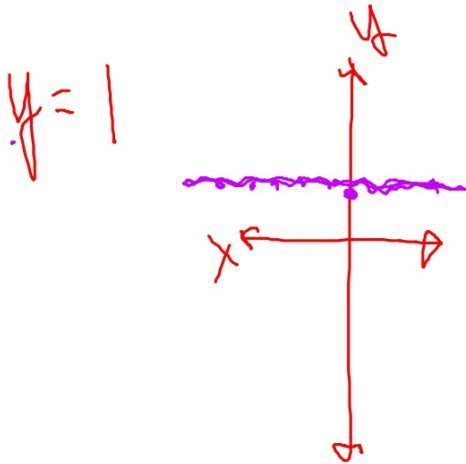
$(5, 9)$

$x = 5$

EXAMPLE 1

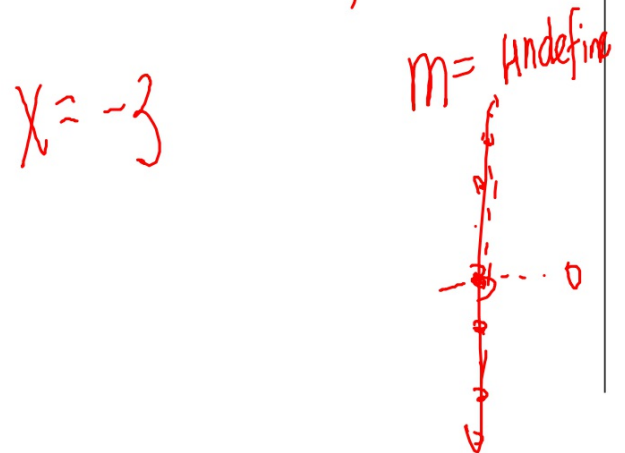
Write the equation of the line described in slope-intercept form when applicable.

a) Horizontal line through $(-4, 1)$



Answer

b) Vertical line through $(-3, -5)$



Answer

EXAMPLE I

Write the equation of the line described in slope-intercept form when applicable.

c) Line through $(9, -2)$ and
parallel to $y = -x + 3$

same slope
 $m = 1$

$$y - (-2) = \cancel{1}x - \cancel{9}$$

$$y = x - 11$$

$$y = x - 11$$

Answer

d) Line through $(-6, 1)$ and
perpendicular to $y = -\frac{3}{2}x - 1$

Flip it
change sign
 $m = \frac{2}{3}$

$(-6, 1)$

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

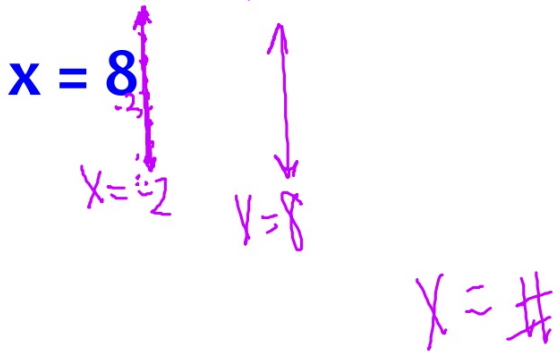
$$y = \frac{2}{3}x + 5$$

Answer

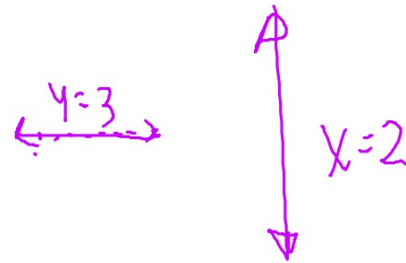
EXAMPLE I

Write the equation of the line described in slope-intercept form when applicable.

e) Line through $(8, 7)$ and parallel to $x = -2$



f) Line through $(2, 2)$ and perpendicular to $y = 3$



Answer

Answer

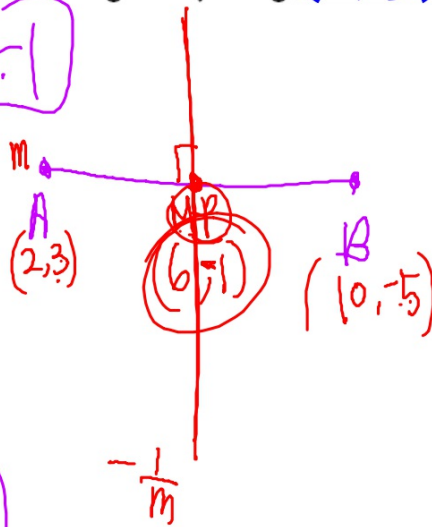
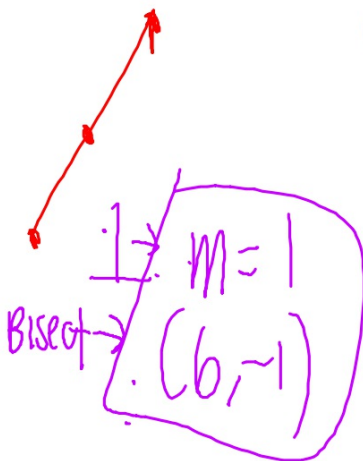
EXAMPLE 1

Write the equation of the line described in slope-intercept form when applicable.

g) The perpendicular bisector of the segment joining $A(2, 3)$ and $B(10, -5)$

slope
AB

$$\frac{-5-3}{10-2} = \frac{-8}{8} = -1$$



$$\frac{2+10}{2} = \frac{3-5}{2}$$

$(6, -1)$
midpoint

$$y = x - 7$$

Answer

Find the equation of the line in slope-int form:

perpendicular bisector of the segment

joining $(-3, 7)$ and $(5, 1)$

FIND MIDPOINT

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$
$$(1, 4)$$

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

Answer

goes thru midpoint, has a \perp slope

$$\frac{4}{3} + \frac{4}{3}$$

FIND slope \rightarrow perpendicular

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-3}{4}$$

Flip it
change sign

$$\frac{4}{3}$$

$$y - 4 = \frac{4}{3}(x - 1)$$

Point slope formula

$$y - y_1 = m(x - x_1)$$

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

$$\frac{12}{3} - \frac{4}{3}$$

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

HOMEWORK

Assignment #13.7b

- Page 555 #21-30

(all answers in slope-int form)

- WS: Graphing & Writing Linear Equations

Mon June 4th - Chapter 13 Quiz

Wed June 6th - Chapter 13 Test

Page 555 #21-30 & WS Graphing & Writing linear equations

Give an equation of each line described. Use the form specified by your teacher.

Write in Slope intercept form

21. vertical line through $(2, -5)$
22. horizontal line through $(3, 1)$
23. line through $(5, -3)$ and parallel to the line $x = 4$
24. line through $(-8, -2)$ and parallel to the line $x = 5$
25. line through $(5, 7)$ and parallel to the line $y = 3x - 4$
26. line through $(-1, 3)$ and parallel to the line $3x + 5y = 15$
27. line through $(-3, -2)$ and perpendicular to the line $8x - 5y = 0$
28. line through $(8, 0)$ and perpendicular to the line $3x + 4y = 12$
29. perpendicular bisector of the segment joining $(0, 0)$ and $(10, 6)$
30. perpendicular bisector of the segment joining $(-3, 7)$ and $(5, 1)$

