FMP10
Unit~~X~~ 5

KEY

Equation Writing Practice

Write the equation of the line with the given characteristics. Answers in the form(s) requested.

1. Slope -3 and y-intercept 4. [slope-intercept & general form]

$y = -3x + 4$ $\quad 3x + y - 4 = 0$

2. Slope $\frac{2}{3}$ and point (-6, 1). [slope-point & slope-intercept form]

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

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

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

3. Points (6, -4) and (0, 4). [slope-point & general form]

b = 4!

$m = \frac{-4-4}{6-0} = \frac{-8}{6} = -\frac{4}{3}$

$y + 4 = -\frac{4}{3}(x - 6)$

OR

$y - 4 = -\frac{4}{3}(x - 0)$

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

$3y - 12 = -4x$

$4x + 3y - 12 = 0$

4. Slope $-\frac{3}{2}$ and x-intercept 3. [slope-intercept form]

(3, 0)

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

$0 = -\frac{3}{2}(3) + b$

$0 = -\frac{9}{2} + b$

$\frac{9}{2} = b$

$y = -\frac{3}{2}x + \frac{9}{2}$

OR

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

$y = -\frac{3}{2}x + \frac{9}{2}$

5. X-intercept -4 and y-intercept 5. [slope-point form]

(-4, 0) (0, 5)

$m = \frac{5-0}{0-(-4)}$

$m = \frac{5}{4}$

$y - 0 = \frac{5}{4}(x + 4)$

OR

$y - 5 = \frac{5}{4}(x - 0)$

6. Parallel to $x - 3 = 0$ and point (-2, 5). [general form]

same slope

vertical

slope = undefined

$x = -2$

$x + 2 = 0$

$m_{\parallel}$ = undefined

7. Perpendicular to $x + 5 = 0$ and point (3, 4) [general form]

negative reciprocal slope — vertical: $m$ = undefined $\therefore m_\perp = 0$ horizontal line

$y = 4$

$y - 4 = 0$

8. Parallel to $y = -2x + 4$ and same y-intercept as $y = x - 3$. [slope-intercept form]

same slope $m = -2$

$\therefore m_{\parallel} = -2$

$b = -3$

$y = -2x - 3$

9. Perpendicular to $3x + 2y = 6$ and point (3, -4). [slope-point form]

$2y = -3x + 6$

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

$m = -\frac{3}{2}$

$\therefore m_\perp = \frac{2}{3}$

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

$4 + y = 0$

10. Parallel to $x - 3y + 6 = 0$ with the same x-intercept as $y = 2x + 8$. [general form]

$3y = x + 6$

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

$m = \frac{1}{3}$

$m_{\parallel} = \frac{1}{3}$

$0 = 2x + 8$

$-8 = 2x$

$-4 = x$-int  point $(-4, 0)$

$y - 0 = \frac{1}{3}(x + 4)$

$3(y) = \left(\frac{1}{3}x + \frac{4}{3}\right)3$

$3y = x + 4$ $\longrightarrow$ $x - 3y + 4 = 0$

11. Perpendicular to $3x = 4y + 12$ with the same y-intercept as $y + 3 = 2x$. [all forms]

$4y = 3x - 12$

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

$m = \frac{3}{4}$

$\therefore m_\perp = -\frac{4}{3}$

$y = 2x - 3$

y-int $b = -3$ $(0, -3)$

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

$y + 3 = -\frac{4}{3}(x - 0)$

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

$3y = -4x - 9$

$4x + 3y + 9 = 0$