Linear Equations

Finding the Equation of a Line – Given the Slope and a point

Write the Linear Equation containing the following in Slope-Intercept Form:

1. $(4,-3)$ & $m = -1$

$y = -1x + b$
$-3 = -1(4) + b$
$-3 = -4 + b$
$+4 \quad +4$
$1 = b$

$y = -1x + 1$

2. $(-5,-6)$ & $m = 2$

$y = 2x + b$
$-6 = 2(-5) + b$
$-6 = -10 + b$
$+10 \quad +10$
$4 = b$

$y = 2x + 4$

3. $(-7,2)$ & $m = 3$

$y = 3x + b$
$2 = 3(-7) + b$
$2 = -21 + b$
$+21 \quad +21$
$23 = b$

$y = 3x + 23$

4. $(3,5)$ & $m = -2$

$y = -2x + b$
$5 = -2(3) + b$
$5 = -6 + b$
$+6 \quad +6$
$11 = b$

$y = -2x + 11$

5. $(6,-2)$ & $m = -3$

$y = -3x + b$
$-2 = -3(6) + b$
$-2 = -18 + b$
$+18 \quad +18$
$16 = b$

$y = -3x + 16$

6. $(5,-2)$ & $m = 2$

$y = 2x + b$
$-2 = 2(5) + b$
$-2 = 10 + b$
$-10 \quad -10$
$-12 = b$

$y = 2x - 12$

7. $(7,0)$ & $m = 4$

$y = 4x + b$
$0 = 4(7) + b$
$0 = 28 + b$
$-28 \quad -28$
$-28 = b$

$y = 4x - 28$

8. $(0,9)$ & $m = -2$

$y = -2x + b$
$9 = -2(0) + b$
$9 = 0 + b$
$9 = b$

$y = -2x + 9$

9. $(5,-1)$ & $m = \frac{1}{5}$

$y = \frac{1}{5}x + b$
$-1 = \frac{1}{5}(5) + b$
$-1 = 1 + b$
$-1 \quad -1$
$-2 = b$

$y = \frac{1}{5}x - 2$

10. $(-3,-2)$ & $m = \frac{1}{4}$

$y = \frac{1}{4}x + b$
$-2 = \frac{1}{4}(-3) + b$
$-2 = \frac{-3}{4} + b$
$+\frac{3}{4} \quad +\frac{3}{4}$
$-5/4 = b$

$y = \frac{1}{4}x - \frac{5}{4}$

11. $(-5,-2)$ & $m = \frac{7}{5}$

$y = \frac{7}{5}x + b$

$-2 = \frac{7}{5}(-5) + b$

$-2 = -7 + b$

$+7 \quad +7$

$5 = b$

$y = \frac{7}{5}x + 5$

12. $(-4,-2)$ & $m = 1$

$y = 1x + b$

$-2 = 1(-4) + b$

$-2 = -4 + b$

$+4 \quad +4$

$2 = b$

$y = 1x + 2$

13. $(5,1)$ & $m = \frac{1}{5}$

$y = \frac{1}{5}x + b$

$1 = \frac{1}{5}(5) + b$

$1 = 1 + b$

$-1 \quad -1$

$0 = b$

$y = \frac{1}{5}x$

14. $(5,1)$ & $m = \frac{4}{5}$

$y = \frac{4}{5}x + b$

$1 = \frac{4}{5}(5) + b$

$1 = 4 + b$

$-4 \quad -4$

$-3 = b$

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

15. $(4,0)$ & $m = \frac{3}{5}$

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

$0 = \frac{3}{5}(4) + b$

$0 = \frac{12}{5} + b$

$-\frac{12}{5} \quad -\frac{12}{5}$

$-\frac{12}{5} = b$

$y = \frac{3}{5}x - \frac{12}{5}$

16. $(0,1)$ & $m = -\frac{1}{3}$

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

$1 = -\frac{1}{3}(0) + b$

$1 = 0 + b$

$1 = b$

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

17. $(-3,8)$ & $m = -3$

$y = -3x + b$

$8 = -3(-3) + b$

$8 = 9 + b$

$-9 \quad -9$

$-1 = b$

$y = -3x - 1$

18. $(11,-3)$ & $m = 5$

$y = 5x + b$

$-3 = 5(11) + b$

$-3 = 55 + b$

$-55 \quad -55$

$-58 = b$

$y = 5x - 58$

19. $(4,-1)$ & $m = \frac{-3}{4}$

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

$-1 = -\frac{3}{4}(4) + b$

$-1 = -3 + b$

$+3 \quad +3$

$2 = b$

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

20. $(10,-15)$ & $m = -2$

$y = -2x + b$

$-15 = -2(10) + b$

$-15 = -20 + b$

$+20 \quad +20$

$5 = b$

$y = -2x + 5$