

# Linear Equations (Part 2)

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## Linear Equations Review

Write the Equation of the Following lines in the form  $y=mx+b$ :

1. Through  $(4, -4)$  and parallel to  $y = -x - 4$   $m = -1$

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

$$-4 = -4 + b$$

$$0 = b$$

$$y = -x$$

2. Through  $(-4, -1)$  and parallel to  $y = 2x + 5$   $m = 2$

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

$$-1 = -8 + b$$

$$7 = b$$

$$y = 2x + 7$$

3. Through  $(2, 0)$  and parallel to  $y = \frac{1}{3}x - 7$   $m = \frac{1}{3}$

$$0 = \frac{1}{3}(2) + b$$

$$0 = \frac{2}{3} + b$$

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

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

4. Through  $(-2, 4)$ , parallel to  $y = -\frac{5}{2}x + 5$   $m = -\frac{5}{2}$

$$4 = \left(-\frac{5}{2}\right)\left(-\frac{2}{1}\right) + b$$

$$4 = 5 + b$$

$$-1 = b$$

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

5. Through  $(2, 0)$  and perp. to  $y = \frac{2}{3}x$   $\perp m = -\frac{3}{2}$

$$0 = \left(-\frac{3}{2}\right)\left(\frac{2}{1}\right) + b$$

$$0 = -3 + b$$

$$3 = b$$

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

6. Through  $(5, 0)$  and perp. to  $y = -x + 5$   $\perp m = 1$

$$0 = 1(5) + b$$

$$0 = 5 + b$$

$$-5 = b$$

$$y = x - 5$$

7. Through  $(2, 4)$  and perp. to  $y = -\frac{2}{7}x - 3$   $\perp m = \frac{7}{2}$

$$4 = \left(\frac{7}{2}\right)\left(\frac{2}{1}\right) + b$$

$$4 = 7 + b$$

$$-3 = b$$

$$y = \frac{7}{2}x - 3$$

8. Through  $(-2, 4)$  and perp. to  $y = -\frac{3}{2}x + 3$   $\perp m = \frac{2}{3}$

$$4 = \left(\frac{2}{3}\right)\left(-\frac{2}{1}\right) + b$$

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

$$\frac{12}{3} + \frac{4}{3} = b$$

$$\frac{16}{3} = b$$

$$y = \frac{2}{3}x + \frac{16}{3}$$

# Linear Equations (Part 2)

Write the Equation of the Following lines in the form  $y=mx+b$

9. Through the points  $(4, -2)$  and  $(6, -4)$

$$m = \frac{-4 - (-2)}{6 - 4}$$

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

$$= -1$$

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

$$-2 = -4 + b$$

$$2 = b$$

$$y = -1x + 2$$

10. Through the points  $(-1, 7)$  and  $(-2, 4)$

$$m = \frac{7 - 4}{-1 - (-2)}$$

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

$$= 3$$

$$7 = 3(-1) + b$$

$$7 = -3 + b$$

$$10 = b$$

$$y = 3x + 10$$

11. Through the points  $(6, -12)$  and  $(15, -3)$

$$m = \frac{-3 - (-12)}{15 - 6}$$

$$= \frac{9}{9}$$

$$= 1$$

$$-12 = 1(6) + b$$

$$-12 - 6 = b$$

$$-18 = b$$

$$y = 1x - 18$$

12. Through the points  $(9, 3)$  and  $(19, -17)$

$$m = \frac{3 - (-17)}{9 - 19}$$

$$= \frac{20}{-10}$$

$$= -2$$

$$3 = -2(9) + b$$

$$3 = -18 + b$$

$$21 = b$$

$$y = -2x + 21$$

13. Through the points  $(19, -2)$  and  $(-11, 10)$

$$m = \frac{10 - (-2)}{-11 - 19}$$

$$= \frac{12}{-30}$$

$$= -\frac{6}{15}$$

$$10 = -\frac{6}{15}(-11) + b$$

$$10 = \frac{66}{15} + b$$

$$10 = \frac{22}{5} + b$$

$$\frac{50}{5} - \frac{22}{5} = b$$

$$\frac{28}{5} = b$$

$$y = -\frac{6}{15}x + \frac{28}{5}$$

14. Through the points  $(-4, 7)$  and  $(-6, -4)$

$$m = \frac{7 - (-4)}{-4 - (-6)}$$

$$= \frac{11}{2}$$

$$7 = \frac{11}{2}(-4) + b$$

$$7 = -22 + b$$

$$29 = b$$

$$y = \frac{11}{2}x + 29$$

15. Through the points  $(-2, 7)$  and  $(3, -1)$

$$m = \frac{7 - (-1)}{-2 - 3}$$

$$= \frac{8}{-5}$$

$$-1 = \left(-\frac{8}{5}\right)(3) + b$$

$$-1 = -\frac{24}{5} + b$$

$$\frac{-5}{5} + \frac{24}{5} = b$$

$$\frac{19}{5} = b \quad y =$$

16. Through the points  $(2, 6)$  and  $(5, 10)$

$$m = \frac{10 - 6}{5 - 2}$$

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

$$6 = \frac{4}{3}(2) + b$$

$$6 = \frac{8}{3} + b$$

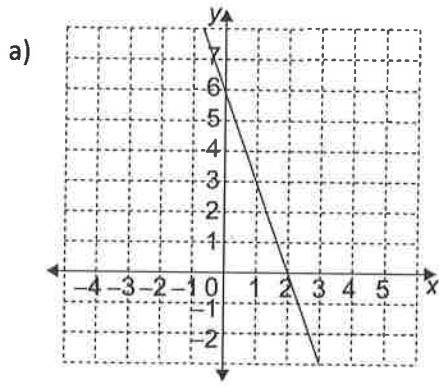
$$\frac{18}{3} - \frac{8}{3} = b$$

$$\frac{10}{3} = b$$

$$y = \frac{4}{3}x + \frac{10}{3}$$

17. Find the equation of each line represented in the graphs:

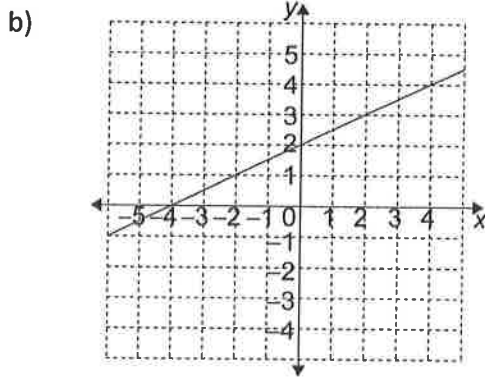
# Linear Equations (Part 2)



$$m = -3$$

$$b = 6$$

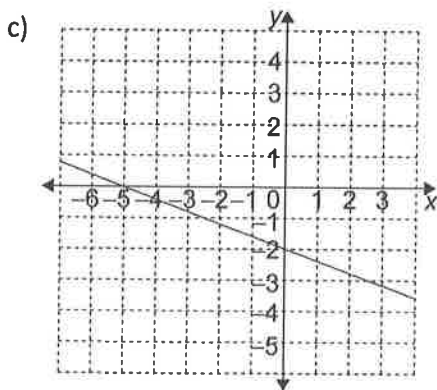
Equation of the line:  $y = -3x + 6$



$$m = \frac{1}{2}$$

$$b = 2$$

Equation of the line:  $y = \frac{1}{2}x + 2$



$$m = -\frac{2}{5}$$

$$b = -2$$

Equation of the line:  $y = -\frac{2}{5}x - 2$