

# Mathematics 10 Academic

- Linear Relations (lines)
- Quadratic Relations (parabolas)
- Trigonometry (solving triangles)

1) Graph the line determined by the equation:

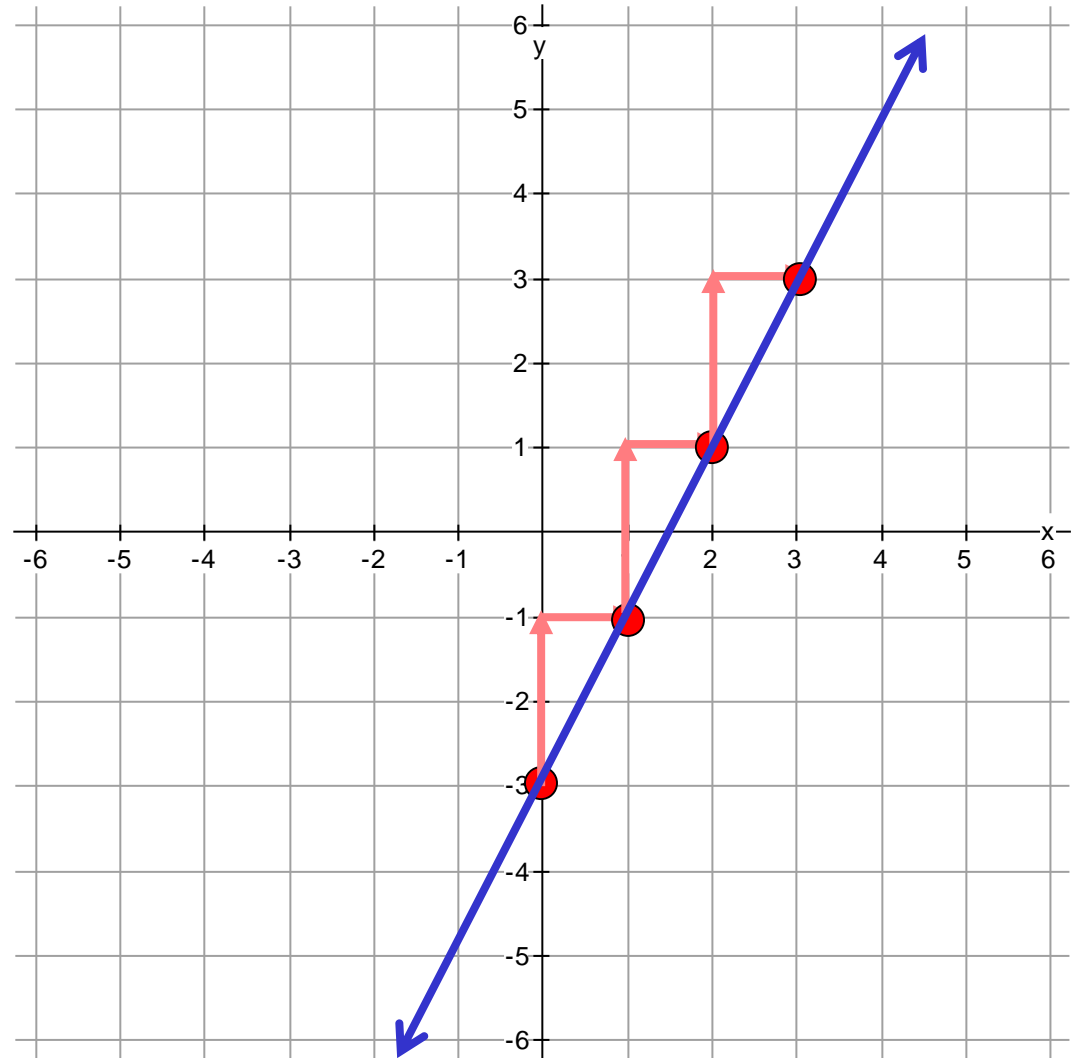
$$y = 2x - 3$$

$y = mx + b$  is the slope y-intercept form of a line.

$$y = 2x - 3$$

$$m = 2$$

$$b = -3$$



2) Graph the line determined by the equation:

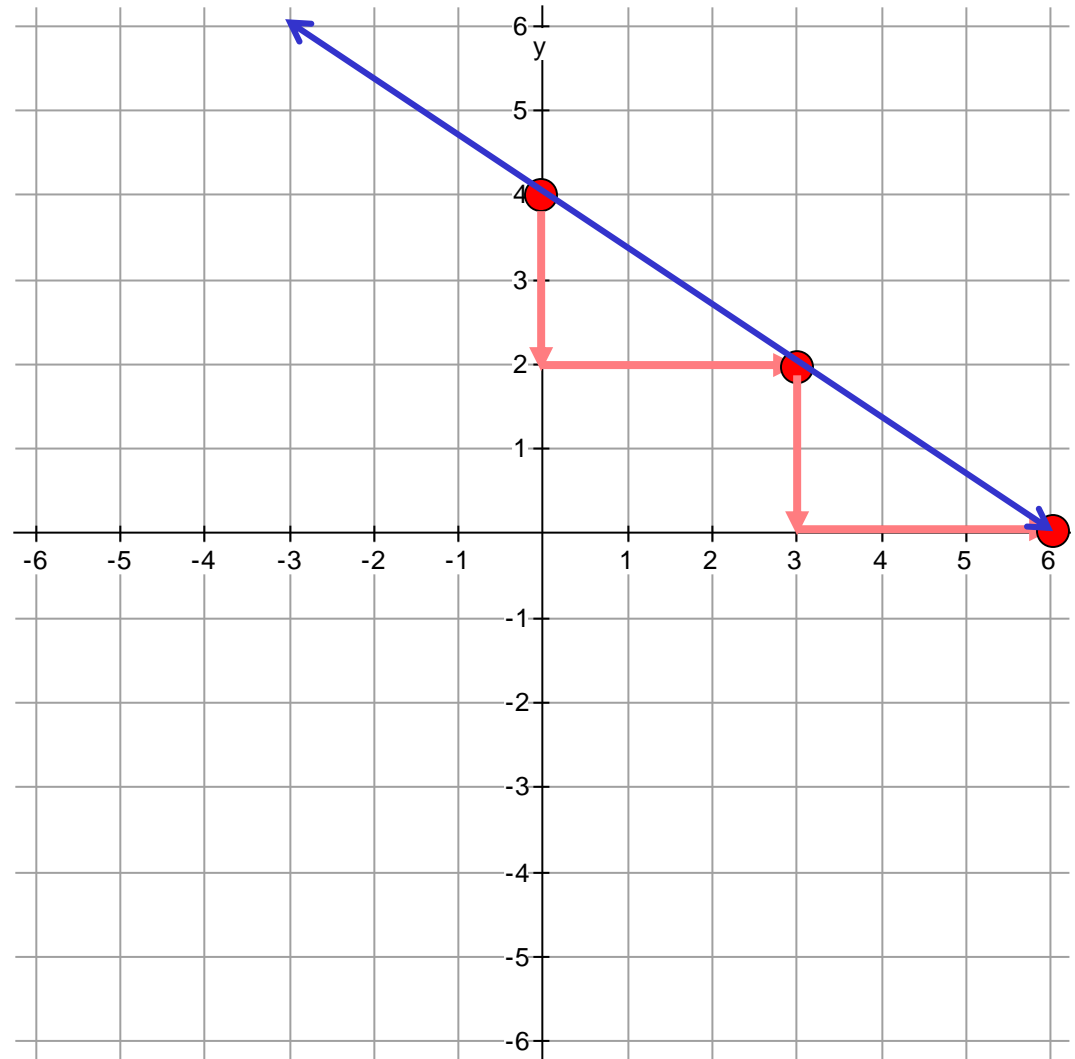
$$y = -\frac{2}{3}x + 4$$

$y = mx + b$  is the slope y-intercept form of a line.

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

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

$$b = 4$$



## Expand and Simplify the following:

(multiply and add like terms):

$$(3): \quad 8(x - 3) + 10$$

$$= 8x - \underline{24} + 10$$

$$= 8x - 14$$

$$(4): \quad 6(x + 2) - 5(2x + 5)$$

$$= 6x + 12 - 10x - 25$$

$$= \underline{6x - 10x} + \underline{12 - 25}$$

$$= -4x - 13$$

5) Simplify and evaluate for  $a = -2$

$$\begin{aligned} & 4(a + 5) - (2a - 3) \\ &= 4a + 20 - 2a + 3 \\ &= \underline{4a - 2a} + \underline{20 + 3} \\ &= 2a + 23 \\ &= 2(-2) + 23 \\ &= -4 + 23 \\ &= 19 \end{aligned}$$

**Example:** multiply the following.

6)  $(4x^5)(3x^4) = 12x^9$       multiply the coefficients, add  
the exponents

7)  $(5a^4)^2 = 5^2a^8$       Power law: multiply  
 $= 25a^8$       the exponents

Divide the following.

8)  $\frac{12x^6}{4x^2}$       divide the coefficients,  
subtract the exponents

## Example (9) Solve for $s$ .

$$2(3s + 1) + 5 = 10 \quad \text{expand and simplify first}$$

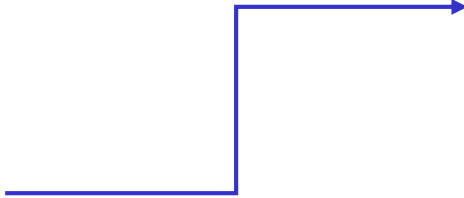
$$6s + 2 + 5 = 10$$

$$6s + 7 = 10$$

$$6s + 7 - 7 = 10 - 7$$

$$6s = 3$$

$$\frac{6s}{6} = \frac{3}{6}$$


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

10) Solve for  $a$

$$\frac{a}{3} - 3 = \frac{5}{6}$$

$$6 \left[ \frac{a}{3} - 3 \right] = 6 \left[ \frac{5}{6} \right]$$

$$\frac{6a}{3} - 18 = \frac{30}{6}$$

$$2a - 18 = 5$$


$$2a - 18 + 18 = 5 + 18$$

$$2a = 23$$

$$a = 11.5$$