

3rd June



Corbettmaths

Shown is the graph of  $y = x^2 + ax + b$

The graph crosses the y-axis at (0, 18) and the x-axis at (3, 0) and (c, 0), where  $c > 3$

Find the values of a and b

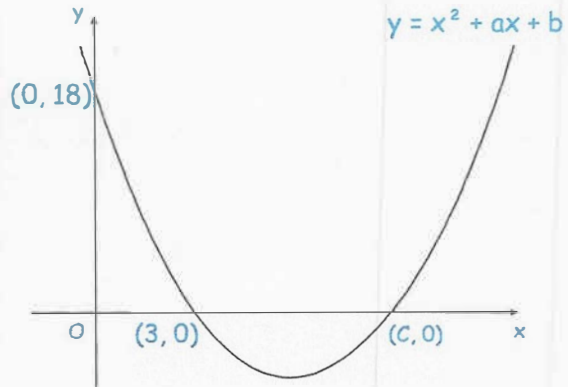
$b = 18$  (y intercept)

$a = -9$

Since

$$(x-3)(x-6) = x^2 - 9x + 18$$

(c = 6)



Given

$$f(x) = \frac{2x + 1}{5}$$

find

$$f^{-1}(4) = 9\frac{1}{2}$$

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

$$5y = 2x + 1$$

$$x = \frac{5y - 1}{2} \quad \frac{5 \times 4 - 1}{2} = 9\frac{1}{2}$$

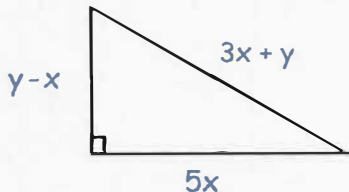
An object has a mass of 420kg, correct to two significant figures.

The density of the material it is made from is 5.4g/cm<sup>3</sup>, correct to one decimal place. Work out the smallest possible volume of the object. Give your answer to three significant figures.

$$V_{\min} = \frac{M_{\min}}{D_{\max}} = \frac{415,000}{5.45}$$

$$= 76146.78 \dots$$

$$\approx \underline{76100 \text{ cm}^3}$$



Prove  $x : y = 8 : 17$

$$(y-x)^2 + (5x)^2 = (3x+y)^2$$

$$26x^2 + y^2 - 2xy = 9x^2 + 6xy + y^2$$

$$17x^2 = 8xy$$

$$17x = 8y$$

$$\therefore x : y = 8 : 17$$