

10th May



Corbettmaths

Rearrange

$$y = \frac{9c^3 + 3x}{c^3 - 8}$$

make c the subject

$$c^3 y - 8y = 9c^3 + 3x$$

$$c^3 y - 9c^3 = 8y + 3x$$

$$c^3 (y - 9) = 8y + 3x$$

$$c^3 = \frac{8y + 3x}{y - 9}$$

$$c = \sqrt[3]{\frac{8y + 3x}{y - 9}}$$

$f(x) = x^2 - 2x - 8$ for all values of x

What is the range of $f(x)$?

$$(x - 1)^2 - 1 - 8$$

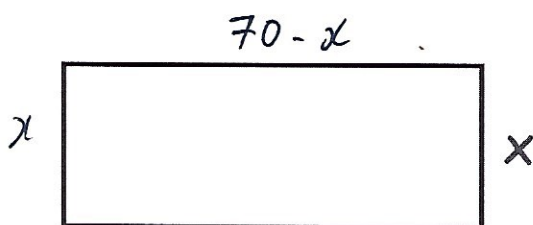
$$(x - 1)^2 - 9$$

$$(1, -9)$$

∴

$$f(x) \geq -9$$

A farmer creates a rectangular pen for his chickens.



Show that the length of the rectangle is $70 - x$ metres

$$\frac{140 - 2x}{2} = 70 - x$$

The width of the field is x metres.

The perimeter of the field is 140 metres.

Show that the area of the field is

$$A = 70x - x^2$$

$$A = x(70 - x)$$

$$= 70x - x^2$$

Use differentiation to find the value of x for which A is a maximum

$$\frac{dA}{dx} = 70 - 2x$$

$$70 - 2x = 0$$

$$x = 35 \text{ m}$$