

**5th April**

Corbettmaths

The straight line joining  $(-4, 24)$  and  $(a, 3)$  has a length of  $7\sqrt{10}$

Find the two possible values of  $a$ .

$$(a - (-4))^2 + (3 - 24)^2 = (7\sqrt{10})^2$$

$$(a + 4)^2 + (-21)^2 = 490$$

$$a^2 + 8a + 16 + 441 = 490$$

$$a^2 + 8a - 33 = 0$$

$$(a + 11)(a - 3) = 0$$

$$a = -11 \text{ or } a = 3$$

A function  $f(x)$  is defined as

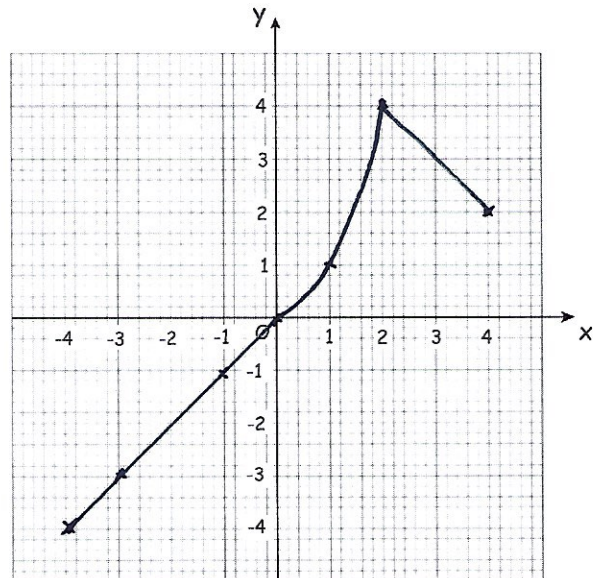
$$f(x) = x \quad -4 \leq x < 0$$

$$= x^2 \quad 0 \leq x < 2$$

$$= 6 - x \quad 2 \leq x \leq 4$$

Draw the graph of  $y = f(x)$  and state its range.

$$-4 \leq f(x) \leq 4$$



Solve

$$2\sin^2 x + 1 = 5\cos x$$

for  $0^\circ < x < 360^\circ$

$$2(1 - \cos^2 x) + 1 = 5\cos x$$

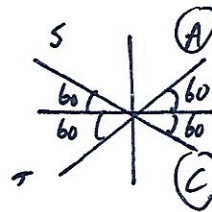
$$2 - 2\cos^2 x + 1 = 5\cos x$$

$$0 = 2\cos^2 x + 5\cos x - 3$$

$$0 = (2\cos x - 1)(\cos x + 3)$$

$$\cos x = \frac{1}{2}$$

$$x = 60^\circ$$



$$x = 60^\circ, 300^\circ$$