Name: _____ 5-a-day Further Maths

21st May

Corbettmaths

Make h the subject of

$m = 20 + (h-7)^2$

$m - 20 = (h-7)^2$

$\pm\sqrt{m-20} = h-7$

$h = 7 \pm \sqrt{m-20}$

AB is a diameter of a circle C.
Q is the centre of the circle
A has coordinates (–7, 14) and B has coordinates (3, 2)

Find the centre of the circle, Q

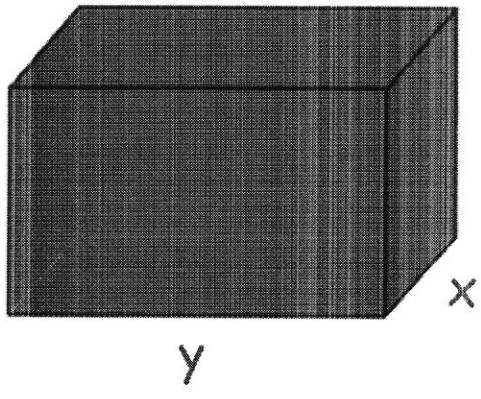
Q (–2, 8)

Find the equation of C

$QA = \sqrt{5^2+6^2}$

$r = \sqrt{61}$

C is $(x+2)^2 + (y-8)^2 = 61$



The surface area of the cuboid is $240cm^2$

$SA = 3x \times x \times 2 + 3x \times y \times 2 + x \times y \times 2$

$240 = 6x^2 + 8xy$

$8xy = 240 - 6x^2$

$y = \frac{30}{x} - \frac{3x}{4}$

Show that the volume of the cuboid is

$V = 90x - \frac{9}{4}x^3$

$V = 3x^2y$

$= 3x^2\left(\frac{30}{x} - \frac{3x}{4}\right)$

$= 90x - \frac{9}{4}x^3$

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

$\frac{dV}{dx} = 90 - \frac{27}{4}x^2$

At max $\frac{27}{4}x^2 = 90$

$\Rightarrow x^2 = \frac{40}{3}$

$\Rightarrow x = 3.65\,cm$

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