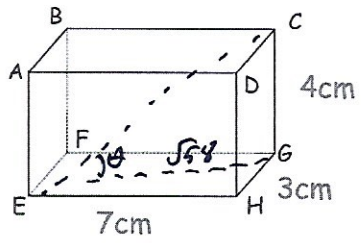
Name: _____ 5-a-day Further Maths

27th March

Corbettmaths



$EG = \sqrt{7^2+3^2}$
$= \sqrt{58}$

Calculate angle CEG

$\tan\theta = \frac{4}{\sqrt{58}}$

$\theta = 27.71°$

Rearrange

$y = \dfrac{2a(y+w)}{4w}$ to make w the subject

$y = \frac{a(y+w)}{2w}$

$2wy = ay + aw$

$2wy - aw = ay$

$w(2y-a) = ay$

$w = \frac{ay}{2y-a}$

$4a(2x+5)+3(ax+1) \equiv b - 33x$

Work out a and b

$8ax + 20a + 3ax + 3 \equiv b - 33x$

$11ax + 20a + 3 \equiv -33x + b$

$a = -3$

$20a + 3 = b$

$b = -57$

The point A lies on the curve
$y = x^2 - 2x + 4$

The x-coordinate of A is –1

The normal at A also intersects the curve at B.

Work out the coordinates of point B.

$\left(\frac{13}{4}, \frac{129}{16}\right)$

$\frac{dy}{dx} = 2x - 2$

At A $y = 7$, $\frac{dy}{dx} = -4$

$y = \frac{1}{4}x + c$

$7 = -\frac{1}{4} + c$

$c = 7\frac{1}{4}$ $\left(\frac{29}{4}\right)$

$y = \frac{1}{4}x + \frac{29}{4}$

$x^2 - 2x + 4 = \frac{1}{4}x + \frac{29}{4}$

$4x^2 - 8x + 16 = x + 29$

$4x^2 - 9x - 13 = 0$

$(x+1)(4x-13) = 0$

$x = -1$ $x = \frac{13}{4}$ ✓