Name: _____ 5-a-day Further Maths

31st October

Corbettmaths

The first five terms of a sequence are shown below.

−20, −33, −52, −77, −108 ... ...

−13 −19

−6

Work out an expression for the nth term of the sequence

$t(n) = an^2 + bn + c$

$a + b + c = -20$

$3a + b = -13$

$2a = -6 \Rightarrow a = -3$

$-9 + b = -13 \Rightarrow b = -4$

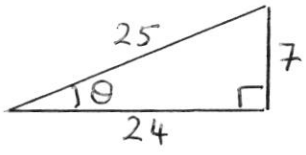
$-3 - 4 + c = -20 \Rightarrow c = -13$

$t(n) = -3n^2 - 4n - 13$

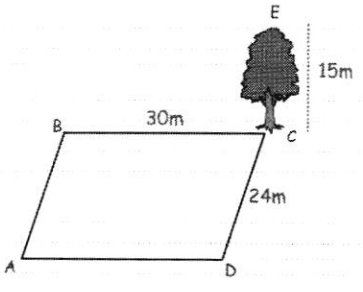
Given $tan\theta = -\frac{7}{24}$ and θ is reflex

Work out the value of $cos\theta$

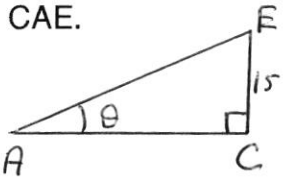
$270° < \theta < 360° \Rightarrow \cos\theta > 0$



$\cos\theta = \frac{24}{25}$



A tree is located in the corner of a rectangular field. Find the size of angle CAE.



$AC = \sqrt{30^2 + 24^2}$

$= 6\sqrt{41}$

$\tan\theta = \frac{15}{6\sqrt{41}}$

$\hat{CAE} = 21.3°$

Find the coordinates where the line $y = x + 8$ and the curve $y = x^2 + 19x + 80$ intersect

$x + 8 = x^2 + 19x + 80$

$0 = x^2 + 18x + 72$

$0 = (x + 6)(x + 12)$

$x = -6, -12$

$\Rightarrow$ $(-6, 2)$ $(-12, -4)$