7th November

Corbettmaths

Factorise fully $1 - y^4$	$= (1-y^2)(1+y^2)$ $= (1-y)(1+y)(1+y^2)$
Write $\dfrac{6\sqrt{12}}{3-\sqrt{5}}$ in the form $\sqrt{x} + \sqrt{y}$ where x and y are integers.	$\dfrac{6\sqrt{12}}{3-\sqrt{5}} \times \dfrac{3+\sqrt{5}}{3+\sqrt{5}} = \dfrac{18\sqrt{12}+6\sqrt{60}}{9-5}$ $= \dfrac{36\sqrt{3}+12\sqrt{15}}{4}$ $= 9\sqrt{3}+3\sqrt{15}$ $= \sqrt{243}+\sqrt{135}$
A curve has equation $y = x^2 + 3x + 3$ Find the gradient of the normal to the curve at the point $(1, 7)$	$\dfrac{dy}{dx} = 2x+3$ $x=1 \Rightarrow \dfrac{dy}{dx} = 5$ Normal is $y-7 = -\frac{1}{5}(x-1)$ $\Rightarrow y-7 = -\frac{1}{5}x+\frac{1}{5}$ $\Rightarrow y = -\frac{1}{5}x+\frac{36}{5}$
The coefficient of the x^2 term in the expansion of $(2x+a)^4$ is 216 Find the possible values of a	$(c+d)^4 = \dots 6c^2d^2 + \dots$ $(2x+a)^4 = \dots 6(2x)^2a^2 \dots$ $\Rightarrow 24a^2 = 216$ $\Rightarrow a^2 = 9$ $\Rightarrow a = 3, -3$