Name: _____ 5-a-day Further Maths

**28th July**

Corbettmaths

Make w the subject of

$$y = \sqrt{\frac{w+1}{4w}}$$

$y^2 = \frac{w+1}{4w}$

$4wy^2 = w+1$

$4wy^2 - w = 1$

$w(4y^2 - 1) = 1$

$w = \frac{1}{4y^2-1}$

Use Pascal's triangle to expand $(x+y)^5$

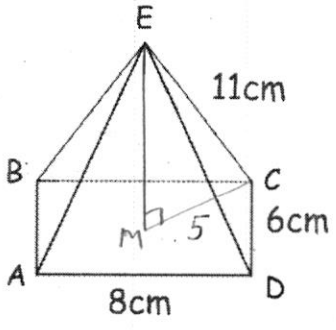
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1

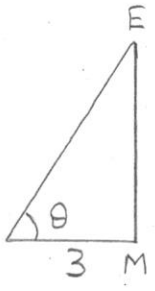
1 5 10 10 5 1

$x^5$ $x^4$ $x^3$ $x^2$ $x$ 1

1 $y$ $y^2$ $y^3$ $y^4$ $y^5$

$x^5 + 5x^4y + 10x^3y^2 + 10x^2y^3 + 5xy^4 + y^5$




Calculate the angle between planes ABCD and ADE.

$CM = \sqrt{4^2+3^2} = 5$

$EM = \sqrt{11^2-5^2} = \sqrt{96}$

$\tan\theta = \frac{\sqrt{96}}{3}$

$\theta = 73.0°$

A curve has equation

$y = 10 + 8x + x^2 - x^3$

Find the coordinates of the maximum turning point.

$\frac{dy}{dx} = 8 + 2x - 3x^2$

$\frac{d^2y}{dx^2} = 2 - 6x$

At TP $3x^2 - 2x - 8 = 0$

$(3x+4)(x-2) = 0$

$x = -\frac{4}{3}, \; x = 2$

$x = 2 \Rightarrow \frac{d^2y}{dx^2} = -10 < 0 \Rightarrow$ MAX

Max at $(2, 22)$