


25th September	
$x : y = 2 : 13$ $y : z = 3 : 4$ Write x in terms of z	 Corbettmaths $\frac{x}{y} = \frac{2}{13} \Rightarrow x = \frac{2}{13}y$ $\frac{y}{z} = \frac{3}{4} \Rightarrow y = \frac{3}{4}z$ $\Rightarrow x = \frac{2}{13} \times \frac{3}{4}z = \frac{3}{26}z$
$y = x^4 - \frac{1}{2}x^3$ Work out the value of $\frac{d^2y}{dx^2}$ when $x = 3$	$\frac{dy}{dx} = 4x^3 - \frac{3}{2}x^2$ $\frac{d^2y}{dx^2} = 12x^2 - 3x$ $x = 3 \Rightarrow \frac{d^2y}{dx^2} = 99.$
Use the factor theorem to show that $(x + 4)$ is a factor of $2x^3 + 5x^2 - 14x - 8 = f(x)$	$f(-4) = -128 + 80 + 56 - 8 = 0$ $\Rightarrow \underline{x+4 \text{ factor.}}$
Hence, factorise fully $2x^3 + 5x^2 - 14x - 8$	$= (x+4)(2x^2 - 3x - 2)$ $= \underline{(x+4)(2x+1)(x-2).}$
Use Pascal's Triangle to work out the coefficient of x^5 in the expansion of $(3-x)^6$	$\text{Term in } x^5 = {}^6C_5 \times 3^1 \times (-x)^5$ $\text{Coeff} = 6 \times 3 \times -1$ $= \underline{-18}$