23rd February

Corbettmaths

Work out $\frac{9}{4x^3}+\frac{5}{3x}-x^2$ $\quad \frac{27}{12x^3}+\frac{20x^2}{12x^3}-\frac{12x^5}{12x^3}$ Give your answer as a single fraction in its simplest form	$\frac{27+20x^2-12x^5}{12x^3}$
Solve the simultaneous equations (1) – $x-y+3z=5$ → ×(2) (2) – $x+y+6z=12$ (3) – $3x-2y+2z=10$ ×3 $2x-2y+6z=10$ –(4) $9x-6y+6z=30$ –(5) $x+y+6z=12$ –(2) (5)–(2) $8x-7y=18$ –(6)	(5)–(4) $7x-4y=20$ –(7) 4×(6) and 7×(7) $32x-28y=72$ –(8) $49x-28y=140$ –(9) (9)–(8): $17x=68$ $\boxed{x=4}$ sub into (8) $128-28y=72$ $-28y=-56$ $\boxed{y=2}$ $\boxed{z=1}$
$y=x^4-2x^2$ Work out the value of $\frac{d^2y}{dx^2}$ when $x=-5$	$\frac{dy}{dx}=4x^3-4x$ $\frac{d^2y}{dx^2}=12x^2-4$ when $x=-5$, $\frac{d^2y}{dx^2}=296$
Prove n^3-n is always divisible by 6. $n(n^2-1)$ n is an integer greater than 1. $n^3-n\equiv\underbrace{(n-1)n(n+1)}_{\text{three consecutive integers}}$	At least one number is even and one is a multiple of 3. $2\times3=6$ ∴ n^3-n is always divisible by 6.

