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## Find Normal to Curve | Past Paper Question | C1 OCR June 2012 Q6

Find the equation of the normal to the curve  $y = \frac{6}{x^2} - 5$  at the point on the curve where  $x = 2$ .

Give your answer in the form  $ax + by + c = 0$ , where  $a$ ,  $b$  and  $c$  are integers.

$$\text{When } x=2, y = \frac{6}{2^2} - 5 = -\frac{7}{2}$$

$$y = \frac{6}{x^2} - 5$$

$$= 6x^{-2} - 5$$

$$\therefore \frac{dy}{dx} = -12x^{-3}$$

$$= -\frac{12}{x^3}$$

$$\text{When } x=2, \frac{dy}{dx} = -\frac{12}{2^3} = -\frac{3}{2}$$

$$\therefore \text{grad. of normal} = \frac{2}{3}$$

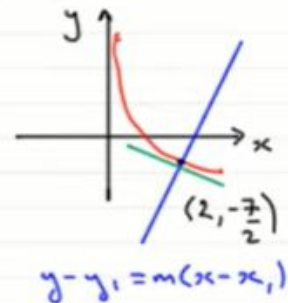
$\therefore$  Equation of normal is:

$$y - \frac{-7}{2} = \frac{2}{3}(x - 2)$$

$$\therefore 6y + 21 = 4(x - 2)$$

$$\therefore 6y + 21 = 4x - 8$$

$$\therefore 4x - 6y - 29 = 0$$



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