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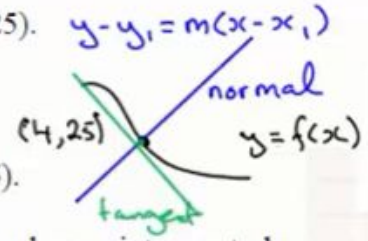
Find Equation of Normal to a Curve | Past Paper Question | C1 Edexcel June 2014 Q10(b)

A curve with equation $y = f(x)$ passes through the point (4, 25).

Given that $f'(x) = \frac{3}{8}x^2 - 10x^{-\frac{1}{2}} + 1, \quad x > 0$

Find an equation of the normal to the curve at the point (4, 25).

Give your answer in the form $ax + by + c = 0$, where a, b and c are integers to be found. **(5)**



grad. of tangent $= f'(4)$

$= \frac{3}{8}(4)^2 - \frac{10}{\sqrt{4}} + 1$

$= 2$

$\therefore$ gradient of normal $= -\frac{1}{2}$

$\therefore$ Equation of normal at (4, 25)

$y - 25 = -\frac{1}{2}(x - 4)$

$\therefore 2y - 50 = -x + 4$

$\therefore x + 2y - 54 = 0$

With the acknowledgement of Exam Solutions.

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