

Aktunor Vitkem (1903792)
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ACTA 4000

[265]

Question 2

a) i) $y = 8x^3 - 2x^2 + x + 10$

$$\frac{dy}{dx} = 24x^2 - 4x + 1$$

ii) $y = (5x - 3)(6x - 1)$

$$y = 30x^2 - 5x - 18x + 3$$

$$y = 30x^2 - 23x + 3$$

$$\frac{dy}{dx} = 60x - 23$$

iii) $y = \frac{3}{\sqrt{x}} + \ln x$

$$y = \frac{3}{x^{0.5}} + \frac{1}{x}$$

$$\frac{dy}{dx} = \frac{3}{0.5x^{-0.5}} - 0.5 + \frac{1}{x}$$

iv) $y = 5 \sin \frac{x}{2} - 6 \cos 3x - \tan \frac{x}{3}$

$$\frac{dy}{dx} = \frac{5}{2} \cos\left(\frac{x}{2}\right) + 18 \sin(3x) + \frac{1}{3} \sec^2\left(\frac{x}{3}\right)$$

v) $y = e^{7x} \tan 3x$