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## Differentiation | Past Paper Question | C1 June 2014 Q7b

Differentiate with respect to  $x$ , giving each answer in its simplest form.

(b)  $\frac{x^5 + 6\sqrt{x}}{2x^2}$  (4)

$$\text{let } y = \frac{x^5 + 6\sqrt{x}}{2x^2}$$

$$= \frac{x^5}{2x^2} + \frac{6x^{1/2}}{2x^2}$$

$$= \frac{1}{2}x^3 + 3x^{-3/2}$$

$$\therefore \frac{dy}{dx} = \frac{3}{2}x^2 - \frac{9}{2}x^{-5/2}$$

$$\therefore \frac{dy}{dx} = \frac{3}{2}x^2 - \frac{9}{2x^{5/2}}$$

$$\text{or } \frac{d}{dx} \left( \frac{x^5 + 6\sqrt{x}}{2x^2} \right) = \frac{d}{dx} \left( \frac{1}{2}x^3 + 3x^{-3/2} \right)$$

$$= \frac{3}{2}x^2 - \frac{9}{2}x^{-5/2}$$

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