Integration

Find

$$\int \frac{9x^4 + 6}{5x^2}\,dx$$

writing your answer in simplest form.

(4 marks)

Split the expression and simplify

$$\frac{9x^4 + 6}{5x^2} = \frac{9x^4}{5x^2} + \frac{6}{5x^2}$$ 1 mark

$$= \frac{9}{5}x^2 + \frac{6}{5}x^{-2}$$ 1 mark

Integrate using $\int x^n\,dx = \frac{x^{n+1}}{n+1} + c$

$$\int \frac{9}{5}x^2 + \frac{6}{5}x^{-2}\,dx = \frac{9}{5} \times \frac{x^3}{3} + \frac{6}{5} \times \frac{x^{-1}}{-1} + c$$ 1 mark

$$= \frac{3}{5}x^3 - \frac{6}{5x} + c$$ 1 mark