

Marking

In this activity, students are given questions and solutions to a number of differentiation and integration questions. Students are required to mark the work. The solutions contain many common errors that are made. Students should mark the work for accuracy, correct solutions where necessary and give advice to help the candidate therefore explain what the error was and how to correct it.

Marking

Mark this piece of work. Add comments and correct any errors in a way that will help the students who produced this piece of work.

$$1. \quad y = x^2 + \frac{3}{x^2} \quad \Rightarrow \quad \frac{dy}{dx} = 2x + 3x^{-2}$$

$$2. \quad y = \frac{1}{4x^2} = 4x^{-2} \quad \Rightarrow \quad \frac{dy}{dx} = -8x^{-3}$$

$$3. \quad y = \frac{3}{x^4} = 3x^{-4} \quad \Rightarrow \quad \frac{dy}{dx} = -12x^{-3}$$

$$4. \quad \int \frac{2}{x^3} dx = \int 2x^{-3} dx = \frac{2x^{-4}}{-4} + c$$

$$5. \quad \int 6\sqrt{x} dx = \int 6x^{\frac{1}{2}} dx = 4x^{\frac{3}{2}} + c$$

$$6. \quad \int x(x^2 + \frac{1}{x^2}) dx = \int x(x^2 + x^{-2}) dx = \frac{x^2}{2} \left(\frac{x^3}{3} + \frac{x^{-1}}{-1} \right) + c$$