



1. Integrate $4x^7 + 6x^{-2}$ with respect to x .

(2)

2. Find $\int (2x + 3)dx$

(2)

3. Integrate $\frac{7}{\sqrt{y}}$

(2)

4. Find $\int y \, dx$ when $y = \frac{1}{4x^3} - \frac{2}{3x^2}$

(3)

5. Find a general expression for y given that, $\frac{dy}{dx} = (x + 1)^2$

(3)

Solutions

1.

$4x^7 + 6x^{-2} = \frac{4x^8}{8} + \frac{6x^{-1}}{-1}$	M1
$= \frac{1}{2}x^8 - 6x^{-1} + c$	M1

2.

$\int (2x + 3)dx = \frac{2x^2}{2} + 3x + c$	M1
$= x^2 + 3x + c$	M1

3.

$\frac{7}{\sqrt{y}} = 7y^{-0.5}$	M1
$= \frac{7y^{0.5}}{0.5}$ $= 14y^{0.5} + c$ or $14\sqrt{y} + c$	M1

4.

$y = \frac{1}{4x^3} - \frac{2}{3x^2} = \frac{1}{4}x^{-3} - \frac{2}{3}x^{-2}$	M1
$= \frac{1}{4 \times -2}x^{-2} - \frac{2}{3 \times -1}x^{-1}$ $= -\frac{1}{8}x^{-2} - \frac{2}{-3}x^{-1}$	M1
$= \frac{2}{3}x^{-1} - \frac{1}{8}x^{-2} + c$	M1

5.

$\frac{dy}{dx} = (x + 1)^2 = (x + 1)(x + 1) = x^2 + 2x + 1$	M1
$y = \frac{x^3}{3} + \frac{2x^2}{2} + x$	M1
$y = \frac{1}{3}x^3 + x^2 + x + c$	M1

