

2.

Rules of integration

$$\int ax^n dx = \frac{ax^{(n+1)}}{(n+1)} + C$$

$$\int f(x) + g(x) dx = \int f(x) dx + \int g(x) dx$$

Examples of Rule 2

Find:

$$1. \int -7 dx$$

$$-7 = -7x^0$$

increase
power by 1

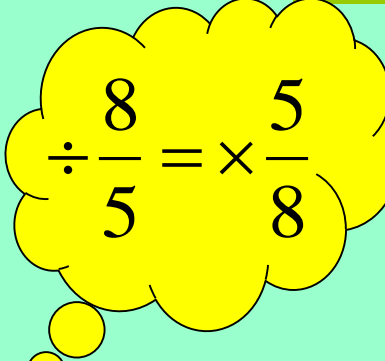
$$= \frac{-7x^1}{1} + C = -7x + C$$

divide
by new power

$$2. \int 12u^2 du$$

$$= \frac{12u^3}{3} + C = 4u^3 + C$$

$$3. \int 7p^{\frac{3}{5}} dp = \frac{7p^{(\frac{3}{5} + \frac{5}{5})}}{(\frac{3}{5} + \frac{5}{5})} + C$$


$$= \frac{7p^{\frac{8}{5}}}{\frac{8}{5}} + C = \frac{5 \times 7 p^{\frac{8}{5}}}{8} + C$$
$$= \frac{35 p^{\frac{8}{5}}}{8} + C$$

Example of Rule 3

Find:

$$4. \int (3f + 3 - f^{-3}) df$$

$$= \frac{3f^2}{2} + 3f \ominus \frac{f^{-2}}{\ominus 2} + C$$

$$= \frac{3f^2}{2} + 3f + \frac{f^{-2}}{2} + C$$

$$= \frac{3}{2} f^2 + 3f + \frac{1}{2f^2} + C$$

increase
power by 1

divide
by new power

Heinemann, p.164, EX 9H,
Q1(a) to (h)
Q2 (a) to (f)
Q3 (a), (c) & (e)