Find the general indefinite integral:

$$\int (2 + \tan^2 \theta) d\theta$$

reset

$$\int_0^4 (4-t)\sqrt{t}\,dt = 4\int_0^4 \sqrt{t}\,dt - \int_0^4 t^{\frac{3}{2}}\,dt$$
$$= \frac{8}{3}\left[t^{\frac{3}{2}}\right]_0^4 - \frac{2}{5}\left[t^{\frac{5}{2}}\right]_0^4$$
$$= \frac{8}{3}\left(4^{\frac{3}{2}}\right) - \frac{2}{5}\left(4^{\frac{5}{2}}\right)$$
$$= \boxed{\frac{128}{15}}$$

Find the general indefinite integral:

$$\int \sqrt[4]{x^5}dx$$

## Exercise 1 - Solution

$$\int \sqrt[4]{x^5}\,dx = \int x^{\frac{5}{4}}\,dx$$
$$= \boxed{\frac{4}{9}x^{\frac{9}{4}} + C} \text{ (Power Rule)}$$

Find the general indefinite integral:

$$\int \left( \frac{1+r}{r} \right)^2 dr$$

$$\int \left( \frac{1+r}{r} \right)^2 dr = \int \frac{(1+r)^2}{r^2} dr$$

$$= \int \frac{r^2 + 2r + 1}{r^2} dr$$

$$= \int 1 + \frac{2}{r} + r^{-2} dr$$

$$= \boxed{r + 2\ln|r| - r^{-1} + C}$$