

| $f(x)$    | $f'(x)$                | $\int f'(x) = f(x)$ |
|-----------|------------------------|---------------------|
| $x^{2+1}$ | $\frac{2x^2}{2}$       | $x^2$               |
| $x^3$     | $\frac{3x^{2+1}}{3}$   | $x^3$               |
| $x^4$     | $\frac{4x^{3+1}}{4}$   |                     |
| $x^{10}$  | $10x^9$                |                     |
| $x^n$     | $\frac{nx^{n-1+1}}{n}$ | $x^n$               |

$$\int x^4 dx$$

$$\int x^4 dx = \frac{1}{5} x^5$$

$$\int x^3 dx = \frac{1}{4} x^4$$

$$\int x^n dx = \frac{1}{n+1} x^{n+1}$$

$$\int \frac{1}{x^3} dx$$

$$\int x^{-3} dx = -\frac{1}{2} x^{-2}$$
$$= -\frac{1}{2x^2}$$

$$\int \sqrt{x} dx$$

$$\int x^{1/2} dx = \frac{2}{3} x^{3/2}$$

$$\int 4x^3 dx = 4 \int x^3 dx$$
$$= 4 \left( \frac{1}{4} x^4 \right) = x^4$$

$$d(x^2) = \int 2x$$

$$\frac{d(x^2 + 1)}{dx} = \int 2x = x^2 + C$$

$$\frac{d(x^2 + 5.8)}{dx} = \int 2x$$

$$\int \frac{x+1}{\sqrt{x}} dx$$

$$\int \frac{x}{\sqrt{x}} + \frac{1}{\sqrt{x}} dx$$

$$\int x^{1/2} + x^{-1/2} dx$$

$$\int x^{1/2} dx + \int x^{-1/2} dx$$

$$\boxed{\frac{2}{3}x^{3/2} + 2x^{1/2} + C}$$