

Integration

Some formulae for integration, using various methods to solve

$\int f(x) dx$

Let $u = g(x)$

$\frac{du}{dx} = g'(x)$

$du = g'(x) dx$

Applying the method of integration

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$\int f(u) du$

To find x_2

$$x_2, x_1 = f(x_1)$$

$$f'(x_1)$$

$$x_2 = 0.285756005 - \frac{e^{-0.5(0.285756005)}(4 - 0.285756005) - 2}{-2e^{-0.5(0.285756005)} + 0.5(0.5)e^{-0.5(0.285756005)}} = 0.285708605$$

$$\rightarrow 0.285708605$$

To find x_3

$$x_3, x_2 = f(x_2)$$

$$f'(x_2)$$

$$x_3 = 0.285708605 - \frac{e^{-0.5(0.285708605)}(4 - 0.285708605) - 2}{-2e^{-0.5(0.285708605)} + 0.5(0.285708605)e^{-0.5(0.285708605)}} = 0.285708602$$

$$\rightarrow 0.285708602$$

To find x_4

$$x_4 = 0.285708602 - \frac{e^{-0.5(0.285708602)}(4 - 0.285708602) - 2}{-2e^{-0.5(0.285708602)} + 0.5(0.285708602)e^{-0.5(0.285708602)}} = 0.285708602$$

$$\rightarrow 0.285708602$$

Hence, the solution for x is 0.285708602