

Font Paragraph Drawing Editing

Text Direction, Align Text, Convert to SmartArt, Shape Fill, Shape Outline, Shape Effects, Find, Replace, Select

$$= \int \frac{\sqrt{x^2+1}}{\sqrt{x^2+1}} dx + \int \frac{2x dx}{\sqrt{x^2+1}} + 2 \int \frac{dx}{\sqrt{x^2+1}}$$

$\int \frac{dx}{\sqrt{t}} \quad x^2+1=t, 2x dx = dt$

$$= \frac{x}{2} \sqrt{x^2+1} + \frac{1}{2} \log|x + \sqrt{x^2+1}| + 2\sqrt{x^2+1} + 2 \log|x + \sqrt{x^2+1}| + C$$

1.  $\int \sqrt{x^2+8x-6} dx$

2.  $\int \frac{(\log x)^2 + 2}{x} dx$



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$$1. \text{ Evaluate } \int \sqrt{1-4x-x^2} dx = \int \sqrt{5-(x+2)^2} dx$$

$$1-4x-x^2+4-4$$

$$= \frac{x+2}{2} \sqrt{5-(x+2)^2} + \frac{5}{2} \sin^{-1} \left( \frac{x+2}{\sqrt{5}} \right) + C$$

$$2. \text{ Evaluate } \int \frac{x^2+2x+3}{\sqrt{x^2+1}} dx$$

$$\frac{d}{dx}(x^2+1) = 2x ; \quad I = \int \frac{(x^2+1) + 2x + 2}{\sqrt{x^2+1}} dx$$

$$Q1: \int \sqrt{\frac{x-1}{x+1}} dx$$

Integration of the form:  $\int \sqrt{ax^2+bx+c} dx$

$$(i) \int \sqrt{a^2-x^2} dx = \frac{x}{2} \sqrt{a^2-x^2} + \frac{a^2}{2} \sin^{-1}\left(\frac{x}{a}\right) + c$$

$$(ii) \int \sqrt{a^2+x^2} dx = \frac{x}{2} \sqrt{a^2+x^2} + \frac{a^2}{2} \log|x+\sqrt{a^2+x^2}| + c$$

$$(iii) \int \sqrt{x^2-a^2} dx = \frac{x}{2} \sqrt{x^2-a^2} - \frac{a^2}{2} \log|x+\sqrt{x^2-a^2}| + c$$