

Errata

integration by parts (4) should be e^{2x}

Mixed tech (1).

$$\int \ln(x^2 - x + 2) dx$$

$$u = \ln(x^2 - x + 2) \quad dv = dx$$

$$du = \frac{2x-1}{x^2-x+2} \quad v = x$$

$$= x \ln(x^2 - x + 2) - \int \frac{2x^2 - x}{x^2 - x + 2} dx$$

$$\frac{\frac{2}{x^2-x+2} \int \frac{2x^2-x}{x^2-x+2} - (2x^2-2x+4)}{x-4} \Rightarrow - \int 2 + \frac{x-4}{x^2-x+2} dx$$

$$= x \ln(x^2 - x + 2) - 2x - \frac{1}{2} \int \frac{(2x-1)}{x^2-x+2} dx + \frac{1}{2} \int \frac{dx}{(x-1)^2 + \frac{3}{4}}$$

$$= (x - \frac{1}{2}) \ln(x^2 - x + 2) - 2x + \sqrt{3} \tan^{-1}(\frac{2x-1}{\sqrt{3}}) + C$$