Answer on Question #79851 – Math – Calculus

Question

Intregate with respect to x: xe^x/(x+1)²

Solution

$$\int \frac{xe^x}{(x+1)^2}dx$$

Integrate by parts:

$$u = xe^x \qquad dv = \frac{dx}{(x+1)^2}$$

$$du = (e^x + xe^x)dx = e^x(x+1)dx \qquad v = -\frac{1}{x+1}$$

$$\int \frac{xe^x}{(x+1)^2}dx = uv - \int vdu = -\frac{xe^x}{x+1} + \int \frac{e^x(x+1)}{x+1}dx = -\frac{xe^x}{x+1} + \int e^x dx =$$

$$= -\frac{xe^x}{x+1} + e^x + C = \frac{xe^x + e^x - xe^x}{x+1} + C = \frac{e^x}{x+1} + C$$

Answer: $\frac{e^x}{x+1} + C$