

Quiz 10

Name: _____

Integration by parts formula:

$$\int f(x)g'(x) dx = f(x)g(x) - \int f'(x)g(x) dx$$

1. Find the solution to the differential equation

$$\frac{dy}{dx} = xe^x, \quad y(0) = 1.$$

The solution is the integral $y = \int xe^x dx$. We did this in class with integration by parts. You get $y = xe^x - e^x + C$. Then $y(0) = 0 - 1 + C = 1$, so $C = 2$. The solution is then $y = xe^x - e^x + 2$.