

QUIZ 11

Solve: $y' - 2xy = 3x^2 e^{x^2}$; $y(0) = 5$

I.F. is $e^{\int -2x dx} = e^{-x^2}$

$$e^{-x^2} y' - 2x e^{-x^2} y = 3x^2 \cdot 1$$

$$(y \cdot e^{-x^2})' = 3x^2$$

$$\int 3x^2 dx = y e^{-x^2}$$

$$x^3 + c = y e^{-x^2}$$

$$0 + c = y \cdot 1 = 5$$

$$c = 5$$

$$y = \frac{x^3 + 5}{e^{-x^2}}$$

$$y = x^3 e^{x^2} + 5e^{x^2}$$