$y \qquad y'' - 4y' + 4 = 0 \qquad y(0) = 1 \quad , \quad y'(0) = 1$

$$r = \frac{-(-4) \pm \sqrt{(-4)^2 - 4 \cdot 4}}{2 \cdot}$$

$$\simeq \frac{4 \pm \sqrt{0}}{2}$$

$$r = 2$$

$y(x) = C \cdot e^{2x} + Dxe^{2x}$

$y(0) = 1 = Ce^{2 \cdot 0} + D \cdot 0 \cdot e^{2 \cdot 0}$

$\qquad 1 = C \cdot 1$

$\qquad C = 1$

$y'(x) = 2Ce^{2x} + (Dx)' e^{2x} + D x \cdot 2 e^{2x}$

$\qquad = 2Ce^{2x} + De^{2x} + 2Dxe^{2x}$

$y'(0) = 2 \cdot 1 \cdot 1 + D \cdot e^{2 \cdot 0} + 0 = 1$

$\qquad 1 = 2 + D \cdot 1$

$\qquad -1 = D$

$e^{2x} - xe^{2x}$

$$\alpha^2 \, y' \, y^2 = 2x$$

$$y' \, y^2 = \frac{2}{\alpha}$$

$$\alpha^2 \, y' \, y^2 = 2x$$

$$y' \, y^2 = \frac{2}{\alpha}$$