

Pg 2

$$28) \quad y = e^{-x} \quad \frac{dy}{dx} = -e^{-x} \quad \frac{dy}{dx} + y = -e^{-x} + e^{-x} \neq 0$$

$$y = x^{-1} \quad \frac{dy}{dx} = -x^{-2} \quad \frac{dy}{dx} + y^2 = -x^{-2} + x^{-2} \neq 0$$

$$b) \quad y = Ce^{-x} \quad \frac{dy}{dx} = -Ce^{-x} \quad \frac{dy}{dx} + y = -Ce^{-x} + Ce^{-x} \neq 0$$

$$y = Cx^{-1} \quad \frac{dy}{dx} = -Cx^{-2} \quad -Cx^{-2} + Cx^{-2} = 0 \quad \text{if } C^2 = C, \text{ so } C = 0 \text{ or } 1$$

$$c) \quad y = Cy(x) \quad \frac{dy}{dx} = C \frac{dy}{dx} \quad C \frac{dy}{dx} + P(x) Cy(x) = 0$$

$$= \left[\frac{dy}{dx} + P(x)y(x) \right] \cdot C = 0 \cdot C, \text{ so}$$

$y = Cy(x)$ are equivalent

$$29) \quad \frac{dy}{dx} = \frac{1}{e^{4y} + 2x} \quad \frac{dx}{dy} = e^{4y} + 2x$$

$$\frac{dx}{dy} - 2x = e^{4y} \quad p(y) = -2 \quad n(y) = e^{-2y}$$

$$\frac{d}{dy} (e^{-2y} x) = e^{2y}$$

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

$$x = \frac{e^{4y}}{2} + Ce^{2y}$$