

$$\frac{du}{d\theta} = -2e^{-2\theta}$$

$$\frac{du}{d\theta} = -A \sin \theta + B \cos \theta$$

$$e^{-2\theta} (A \sin \theta + B \cos \theta) + (A \cos \theta + B \sin \theta) - 2e^{-2\theta}$$
$$\frac{dy}{d\theta} = e^{-2\theta} (-A \sin \theta + B \cos \theta) + (A \cos \theta + B \sin \theta) - 2e^{-2\theta}$$
$$+ \frac{3}{4} \sin \theta + \frac{3}{4} \cos \theta$$

$$\theta = \varphi \cdot \frac{dy}{d\theta} = 0$$

$$0 = \frac{3}{4} \sin \theta + \frac{3}{4} \cos \theta$$

Divide through by $\cos \theta$

$$0 = \frac{3}{4} \tan \theta + \frac{3}{4}$$

$$-\frac{3}{4} = \frac{3}{4} \tan \theta \quad -12 = 4(3 \tan \theta)$$

$$-12 = 4(3 \tan \theta)$$

$$-3 = 3 \tan \theta$$

$$-1 = \tan \theta$$

$$\theta = \tan^{-1}(-1)$$

$$\theta = -45^\circ$$

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$$1) \frac{d^2 y}{dx^2} + \frac{dy}{dx} + 5y = 6 \sin x$$

$$m^2 + m + 5 = 0$$

$$m = \frac{-1 \pm \sqrt{1 - 20}}{2}$$

$$m_1 = -0.5 + 1.96i$$

$$m_2 = -0.5 - 1.96i$$

$$\frac{dy}{dx}$$

$$\frac{d^2 y}{dx^2} = -0.5y + 1.96iy$$

$$-0.5y + 1.96iy + 4(-0.5y + 1.96iy) + 5(0.5y + 1.96iy) = 6 \sin x$$

$$(0.5y - 0.5iy + 4(-0.5y + 1.96iy) + 5(0.5y + 1.96iy) = 6 \sin x$$

$$4(-0.5y + 1.96iy) - 4(-0.5y + 1.96iy) + 4(0.5y + 1.96iy) = 6 \sin x$$

$$4y - 4y = 0$$

$$4y - 4y = 0$$

$$4y = 4y$$

$$4y - 4y = 0$$

$$y = 0$$

$$4y - 4y = 0$$

from eq (1)

$$8y = 6$$

$$y = \frac{3}{4}$$

$$y = \frac{3}{4} \dots (1)$$

$$y$$

$$y = \frac{3}{4} \cos x + \frac{3}{4} \sin x$$

$$y = \frac{3}{4} (\cos x + \sin x)$$

6. f

$$y = e^{-0.5x} (A \cos x + B \sin x) + \frac{3}{4} (\cos x + \sin x)$$

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$$y = e^{-0.5x} (A \cos x + B \sin x) + \frac{3}{4} \cos x + \frac{3}{4} \sin x$$

$$\frac{dy}{dx} = \frac{d}{dx} (y)$$

$$y = e^{-0.5x}$$

$$y = A \cos x + B \sin x$$