

## Solutions

2.5

$$\begin{aligned}\# 2. \quad W(\cos 5x, \sin 5x) &= \begin{vmatrix} \cos 5x & \sin 5x \\ -5\sin 5x & 5\cos 5x \end{vmatrix} \\ &= 5\cos^2 5x + 5\sin^2 5x \\ &= 5 \\ &\neq 0\end{aligned}$$

$\therefore \cos 5x$  &  $\sin 5x$  are L.I.

$$\begin{aligned}\# 4. \quad W(e^{-x}, xe^{-x}) &= \begin{vmatrix} e^{-x} & xe^{-x} \\ -e^{-x} & e^{-x} + (-1)xe^{-x} \end{vmatrix} \\ &= e^{-2x} - xe^{-2x} + xe^{-2x} \\ &= e^{-2x} \\ &\neq 0 \text{ anywhere}\end{aligned}$$

$\therefore e^{-x}$  &  $xe^{-x}$  are L.I.