P.I.

$$= \frac{1}{(D+2)} e^{-x} \sin\left(\frac{\pi}{3}-x\right)$$

$$= e^{-x} \cdot \frac{1}{(D-1+2)} \sin\left(\frac{\pi}{3}-x\right)$$

$$= e^{-x} \cdot \frac{1}{(D+1)} \sin\left(\frac{\pi}{3}-x\right)$$

$\because$ $\sin(a-b) = \sin a \cos b - \cos a \sin b$

$\sin\left(\frac{\pi}{3}-x\right) = \sin\frac{\pi}{3} \cos x - \cos\frac{\pi}{3} \sin x$

$= \frac{\sqrt{3}}{2} \cos x - \frac{1}{2} \sin x = \frac{1}{2}[\sqrt{3} \cos x - \sin x]$

$$= e^{-x} \cdot \frac{1}{(D+1)} \cdot \frac{1}{2}[\sqrt{3} \cos x - \sin x]$$

$$= \frac{e^{-x}}{2} \frac{1}{(D+1)} \frac{(D-1)}{(D-1)} [\sqrt{3} \cos x - \sin x]$$

$$= \frac{e^{-x}}{2} \frac{(D-1)}{(D^2-1)} [\sqrt{3} \cos x - \sin x]$$

$$= \frac{e^{-x}}{2} \cdot \left[\sqrt{3} \frac{(D-1) \cos x}{(D^2-1)} - \frac{(D-1) \sin x}{(D^2-1)}\right]$$

$$= \frac{e^{-x}}{2}\left[\sqrt{3}\,\frac{(D-1)\cos x}{(-1-1)} - \frac{(D-1)\sin x}{(-1-1)}\right]$$

$$= -\frac{e^{-x}}{4}\left[\sqrt{3}\,(-\sin x - \cos x) - (\cos x - \sin x)\right]$$

$$= \frac{e^{-x}}{4}\left[\sqrt{3}\,(\sin x + \cos x) + \cos x - \sin x\right]$$

$$= \frac{e^{-x}}{4}\left[(\sqrt{3}-1)\sin x + (\sqrt{3}+1)\cos x\right]$$