Full Answer for Question (11)

$$\left[\frac{2}{5}(\cos t)+\frac{4}{5}(\sin t)-\frac{2}{5}(e^{-t}\cos t)-\frac{6}{5}(e^{-t}\sin t)-\frac{2}{5}(\cos t)+\frac{1}{5}(\sin t)+\frac{2}{5}(e^{-t}\cos t)+\frac{1}{5}(e^{-t}\sin t)\right]$$

Simplified version

$$\sin t-(e^{-t}\sin t)$$

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