

## Answers Sample Exam 1

1.  $\frac{1}{2}e^{-y^2} = \cos x + \frac{3}{2}$

2.  $y = \frac{1}{2}e^{-x} \sin 4x$

3. (a)  $y = c_1 \cos t + c_2 \sin t + 2t \cos t$

(b)  $y \rightarrow \infty$  as  $t \rightarrow \infty$  – Resonance

4. (a)  $\{e^{-2t}, te^{-2t}\}$

(b)  $y_p = A + Bt^2e^{-2t} + (Ct + D) \cos 2t + (Et + F) \sin 2t$

5.  $A(t) = 600(1 - e^{-t/100}) + 5te^{-t/100}$

6.  $y_p = -\frac{3}{2}e^{-2x} - 3xe^{-2x}$

7. T,F,F,F,T