

DUE: 22 March 2011

Please answer these questions on a separate piece of paper.
To receive full credit, you must show your work!!!

1. Find the general solution of the equation specified

(i) $\frac{dy}{dt} = y + e^{-2t}$

(iv) $\frac{dy}{dt} = 2y + \sin 2t$

(ii) $\frac{dy}{dt} = -4y + 3e^{-t}$

(v) $\frac{dy}{dt} = 4y - 5e^{4t}$

(iii) $\frac{dy}{dt} = y + \cos 2t$

(vi) $\frac{dy}{dt} = \frac{y}{2} + 4e^{t/2}$

2. Solve the given initial-value problem

(i) $\frac{dy}{dt} + 2y = e^{t/3}; \quad y(0) = 1$

(iv) $\frac{dy}{dt} + y = 3 \cos 2t; \quad y(0) = -1$

(ii) $\frac{dy}{dt} - 2y = 3e^{-2t}; \quad y(0) = 10$

(v) $\frac{dy}{dt} + 5y = 3e^{-5t}; \quad y(0) = -2$

(iii) $\frac{dy}{dt} + y = \cos 2t; \quad y(0) = 5$

(vi) $\frac{dy}{dt} - 2y = 7e^{2t}; \quad y(0) = 3$