SOLN to Review for exam #2

9.5 #12: $c_1 e^{7t}\begin{bmatrix}1\\2\end{bmatrix} + c_2 e^{-5t}\begin{bmatrix}1\\-2\end{bmatrix}$

9.5 #14: $c_1 e^{3t}\begin{bmatrix}1/3\\4/3\\1\end{bmatrix} + c_2 e^{-2t}\begin{bmatrix}1/3\\-1/3\\1\end{bmatrix} + c_3 e^{-t}\begin{bmatrix}-1\\0\\1\end{bmatrix}$

9.5 #20: $\begin{bmatrix}-e^t & -4e^{4t}\\ e^t & e^{4t}\end{bmatrix}$

9.5 #32: $2e^{3t}\begin{bmatrix}1\\1\end{bmatrix} - 4e^{4t}\begin{bmatrix}3\\2\end{bmatrix}$

9.6 #2: $c_1\begin{bmatrix}-5\cos t\\ 2\cos t - \sin t\end{bmatrix} + c_2\begin{bmatrix}-5\sin t\\ 2\sin t + \cos t\end{bmatrix}$

9.6 #6: $\left[\begin{array}{c|c}\cos 2t & \sin 2t\\ -\cos 2t + \sin 2t & -\sin 2t - \cos 2t\end{array}\right]$

10.2 #18:

$$e^{-4t}\sin 4x + 3e^{-10t}\sin 6x - e^{-300t}\sin 10x$$

10.2 #20: $-\frac{2}{9}\sin 9t \sin 3x + \frac{3}{7}\sin 21t \sin 7x - \frac{1}{30}\sin 30t \sin 10x$

10.3 #10: $\frac{\pi}{2} - \frac{4}{\pi}\sum_{m=0}^{\infty} \frac{1}{(2m+1)^2}\cos[(2m+1)x]$

10.4 #8: $\sum_{n=1}^{\infty} \frac{2}{n}\sin(nx)$

10.4 #12: $\frac{\pi}{2} + 1 - \frac{4}{\pi}\sum_{m=0}^{\infty} \frac{1}{(2m+1)^2}\cos[(2m+1)x]$

(A1) $c_1 e^{7t}\begin{bmatrix}1\\2\end{bmatrix} + c_2 e^{-5t}\begin{bmatrix}1\\-2\end{bmatrix} + \begin{bmatrix}1\\-1\end{bmatrix}$

(A2) $e^{2t}\begin{bmatrix}1-t & -t\\ t & 1+t\end{bmatrix}$

(A3) $\begin{bmatrix}0 & e^{2t} & -3e^{-t}\\ e^{2t} & te^{2t} & 4e^{-t}\\ -e^{-2t} & (1-t)e^{2t} & 2e^{-t}\end{bmatrix}$