MEEG 4703 Quiz m1.183

1. ⑩ Using method of successive transformations of *rows*, determine $\mathbf{A}^{-1}$ for the matrix $\mathbf{A}$ shown.

$$\mathbf{A} = \begin{bmatrix} 3 & -14 & -20 \\ 0 & 1 & 2 \\ 1 & -4 & -5 \end{bmatrix} \qquad \mathbf{B} = \begin{bmatrix} 2 & -1 & 7 \\ -3 & 1 & -9 \\ 4 & -1 & 12 \end{bmatrix}$$

2. ⑩ Using method of successive transformations of *columns*, determine $\mathbf{B}^{-1}$ for the matrix $\mathbf{B}$ shown.

3. ⑩ Using Cayley-Hamilton theorem, determine $\mathbf{H}^6$ for the matrix $\mathbf{H}$ shown.

$$\mathbf{H} = \begin{bmatrix} -1 & 2 \\ 0 & -3 \end{bmatrix}$$

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1. $\mathbf{A}^{-1} = \begin{bmatrix} 3 & 10 & -8 \\ 2 & 5 & -6 \\ -1 & -2 & 3 \end{bmatrix}$ **2.** $\mathbf{B}^{-1} = \begin{bmatrix} -3 & -5 & -2 \\ 0 & 4 & 3 \\ 1 & 2 & 1 \end{bmatrix}$

3. $\mathbf{H}^6 = \begin{bmatrix} 1 & -728 \\ 0 & 729 \end{bmatrix}$ $\left(\begin{array}{l} \lambda_1 = -3,\ \lambda_2 = -1,\ c_0 = -363, \\ c_1 = -364,\ \mathbf{H}^6 = c_0\mathbf{I} + c_1\mathbf{H} \end{array} \right)$