College Algebra with Review
Chapter 4 Test Review - Key

1. $\left(\frac{-1}{3}, \frac{-569}{93}, \frac{-617}{93}, \frac{-18}{31}\right)$

2. $\left(\frac{-550}{273}, \frac{1555}{91}, \frac{4651}{273}, \frac{255}{91}, \frac{-562}{273}\right)$

3. $\left(\frac{10}{23}t + \frac{19}{23}, \frac{1}{23}t + \frac{18}{23}, t\right)$

Given the following three matrices:

$$A = \begin{bmatrix} 3 & -2 & 1 \\ 4 & -5 & 7 \\ 2 & -3 & 4 \end{bmatrix}, B = \begin{bmatrix} 8 & 2 & -1 \\ 3 & -4 & 7 \\ -6 & 2 & 1 \end{bmatrix}, C = \begin{bmatrix} 10 & -1 & 2 \\ 3 & -5 & -9 \\ 1 & 4 & 2 \end{bmatrix}$$

4. Find:

$$a) A + B = \begin{bmatrix} 11 & 0 & 0 \\ 7 & -9 & 14 \\ -4 & -1 & 5 \end{bmatrix}$$

$$b) A - B = \begin{bmatrix} -5 & -4 & 2 \\ 1 & -1 & 0 \\ 8 & -5 & 3 \end{bmatrix}$$

$$c) -7A = \begin{bmatrix} -21 & 14 & -7 \\ -28 & 35 & -49 \\ -14 & 21 & -28 \end{bmatrix}$$

$$d) 10A - 2B = \begin{bmatrix} 14 & -24 & 12 \\ 34 & -42 & 56 \\ 32 & -34 & 38 \end{bmatrix}$$

5. Find:

a) $|B| = -216$

b) $C^{-1} = \begin{bmatrix} 26/309 & 10/309 & 19/309 \\ -5/103 & 6/103 & 32/103 \\ 17/309 & -41/309 & -47/309 \end{bmatrix}$

6. Perform the following row operations (not for fall 2014 semester)

a) $\begin{bmatrix} 3 & -2 & 1 \\ 13 & -11 & 10 \\ 2 & -3 & 4 \end{bmatrix}$

b) $\begin{bmatrix} 10 & -1 & 2 \\ 3 & -5 & -9 \\ -5 & 14 & 20 \end{bmatrix}$

7. Find the determinant (by hand) of: $\begin{vmatrix} 5 & -1 & 3 \\ -2 & 1 & 7 \\ 2 & -6 & 2 \end{vmatrix}$ (Not just the setup but the entire problem using the cofactor method)

$$\begin{vmatrix} 5 & -1 & 3 \\ -2 & 1 & 7 \\ 2 & -6 & 2 \end{vmatrix}$$

$$= 5\begin{vmatrix} 1 & 7 \\ -6 & 2 \end{vmatrix} - (-1)\begin{vmatrix} -2 & 7 \\ 2 & 2 \end{vmatrix} + 3\begin{vmatrix} -2 & 1 \\ 2 & -6 \end{vmatrix}$$

$$= 5[1(2) - (-6)(7)] + 1[-2(2) - 2(7)] + 3[-2(-6) - 2(1)]$$

$$= 5[2 + 42] + 1[-4 - 14] + 3[12 - 2]$$

$$= 5(44) + 1(-18) + 3(10)$$

$$= 220 - 18 + 30$$

$$= 232$$