Pre-Calculus Homework #17 – Answer Key

1) $\det A$ or $|A| = 14,\ A^{-1} = \begin{bmatrix} \frac{3}{14} & \frac{-2}{7} \\ \frac{4}{7} & \frac{-3}{7} \end{bmatrix}$, $\det B$ or $|B| = -34,\ B^{-1} = \begin{bmatrix} \frac{5}{34} & \frac{-7}{34} \\ \frac{-1}{17} & \frac{-2}{17} \end{bmatrix}$

2) $A^{-1} = \begin{bmatrix} \frac{-57}{623} & \frac{2}{89} & \frac{30}{623} \\ \frac{41}{623} & \frac{-3}{89} & \frac{44}{623} \\ \frac{-87}{623} & \frac{-11}{89} & \frac{13}{623} \end{bmatrix}$, $A^{-1}A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$, $AA^{-1} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

3) $\det A$ or $|A| = \frac{-43}{180}$

4) $9A - 7B$ is not possible, $-5A = \begin{bmatrix} 45 & 0 & -30 & 25 & -10 \\ -15 & 40 & 5 & 30 & -20 \\ 0 & -35 & 20 & 15 & -40 \end{bmatrix}$,

AB is not possible, $BA = \begin{bmatrix} -75 & 91 & 23 & -3 & 24 \\ -6 & -32 & 8 & -34 & 20 \\ 84 & -64 & -23 & 63 & -78 \\ -45 & 27 & 36 & 30 & -42 \end{bmatrix}$

5) A^{-1} does not exist

6) $x = \frac{9}{19}, \quad y = \frac{51}{38}$

7) $\frac{6}{3x-2} - \frac{5}{2x+3}$

8) $x = -1, \quad y = -3$

9) $\frac{7}{3x-5} - \frac{5}{4x+3}$

10) $x = \frac{3}{2}, \quad y = \frac{13}{14}, \quad z = \frac{33}{14}$

11) $\frac{1}{x-2}+\frac{3}{(x-2)^2}-\frac{2}{(x-2)^3}$

12) $x=124, \quad y=14, \quad z=-51$

13) $\frac{3}{x-2}-\frac{4}{x-3}+\frac{2}{x-1}$

14) Skirts cost \$27 Dresses cost \$119 Blouses cost \$45 No, she needs \$2 more.

15) $10x-5+\frac{6}{x-3}+\frac{14}{x+2}$

16) $w=-2, \quad x=1, \quad y=2, \quad z=-1$

17) $\frac{41x+3}{x^2+1}-\frac{15}{x+5}$

18) 159 adult tickets sold 78 children's tickets sold 43 senior citizen tickets sold

19) $\frac{5x+1}{x^2+4}+\frac{6}{x-8}$

20) 3 tons of mulch 4 tons of topsoil 2 tons of gravel 1 ton of sand