

MPS21 – Precalculus Exam 6 Review Sheet

For problems that have a calculator icon next to them, you should use your calculator to do all of the relevant work. However, be sure to show all steps, including any matrices that you enter in your calculator as well as the calculator output.

Practice Problems:

1. Solve the system of equation using Gauss-Jordan elimination: $2x + 3y = 7$
 $2x + 6y = 16$



2. Given the coordinates of points A , B , and C . If these points are collinear, use a determinant to find the equation of the line that passes through them. If these points are not collinear, use a determinant to find the area of $\triangle ABC$.
- (a) $A(-5,0)$, $B(4,4)$, $C(3,2)$ (b) $A(0,2)$, $B(1, 2.4)$, $C(-1, 1.6)$

3. Given $A = \begin{bmatrix} 4 & 6 \\ -3 & -2 \end{bmatrix}$. (Show all steps.)

- (a) Find A^{-1} (b) Multiply: $A \cdot A^{-1}$

4. Use a *determinant* to find an equation of the line passing through $(2, 6)$ and $(5, 3)$.



5. Solve the system of equations using your graphing calculator.

$$\begin{aligned}x + y + z &= 0 \\2x + 4y + z &= 0 \\3x + 7y + z &= 0\end{aligned}$$

6. Given $A = \begin{bmatrix} -1 & 4 \\ 0 & 3 \\ 1 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & -3 \\ 2 & 0 \\ -1 & 7 \end{bmatrix}$, and $C = \begin{bmatrix} 1 & 5 & 6 \\ -3 & -2 & -5 \end{bmatrix}$.

Find each of the following, if possible. If not possible, write "undefined."

(a) $3A$

(b) $A+B$

(c) AB

(d) BC



7. Perform the partial fraction decomposition. (You may use your calculator to solve the resulting system of equations. Be sure to show the matrix you wrote along with the resulting matrix in reduced row echelon form.)

$$\frac{2x^3 + 5x^2 + 4x + 28}{(x^2 + 5)(x^2 + 2)}$$



8. Find the equation of a parabola passing through the points $(-2, 3)$, $(-1, 1)$, $(1, 9)$.