

Exam 1 Review

I. Match the planar transformation with its geometric interpretation, and give its inverse.

1) $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

2) $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$

3) $A_{(2,3)}$

4) $\begin{pmatrix} 3 & 0 \\ 0 & 2 \end{pmatrix}$

5) $\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$

6) $A_{(3,2)}$

7) $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$

8) $\begin{pmatrix} 2 & 0 \\ 0 & 3 \end{pmatrix}$

A) Move points right 2, up 3.

B) Flip over the x -axis.

C) Scale x -coordinate by 3, y -coordinate by 2

D) Flip over $y=x$ line.

E) Does nothing

F) Scale x -coordinate by 2, y -coordinate by 3.

G) Move points right 3, up 2.

H) Flip over the y -axis.

II. Let $M = \begin{pmatrix} 3 & -2 \\ 1 & 0 \end{pmatrix}$ & $N = \begin{pmatrix} 3 & 4 \\ 1 & 2 \end{pmatrix}$

1) $M \cdot \begin{pmatrix} 3 \\ -7 \end{pmatrix} =$

2) $\det(M) =$

3) $\det(N) =$

4) $MN =$

5) $NM =$

6) $M^{-1} =$

7) $N^{-1} =$

8) $3 \cdot M =$

III. Find the following vectors:

$$1) (3, 2) + (-1, 4) =$$

$$2) A_{(3,2)}(-1, 4) =$$

$$3) A_{(3,2)}(-7, -5) =$$

$$4) 6 \cdot (-1, 1) =$$

$$5) \begin{pmatrix} 1 & 2 \\ 4 & 3 \end{pmatrix} \begin{pmatrix} 7 \\ 2 \end{pmatrix} =$$

$$6) \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix} \begin{pmatrix} 2 \\ 3 \end{pmatrix} =$$

$$7) -(7, 9) =$$

IV. Find the implied domain:

$$1) e^{x^2-x} = 1$$

$$2) y^2 - 3y + 1 = 0$$

$$3) \log_2(x)^2 + 2\log_2(x) - 1 = 0$$

V. Find all solutions to the following equations:

a) $e^{x^2-x} = 1$, where $x > 0$

b) $y^2 + 3y - 1 = 0$

c) $\log_2(x)^2 + 3\log_2(x) - 1 = 0$