

Solutions

Each answer shows the steps, then the **result**.

2.1

- $\det = 5(4) - 2(3) = 14$

2.2

- $\det = 2 - 1 = 1$; inverse = $\begin{pmatrix} 1 & -1 \\ -1 & 2 \end{pmatrix}$

3.1 B

- A scalar multiple of I is an enlargement; here scale factor 2

3.2

(a)

- $AB = \begin{pmatrix} 1 \cdot 2 + 2 \cdot 1 & 1 \cdot 0 + 2 \cdot 3 \\ 3 \cdot 2 + 4 \cdot 1 & 3 \cdot 0 + 4 \cdot 3 \end{pmatrix} = \begin{pmatrix} 4 & 6 \\ 10 & 12 \end{pmatrix}$

(b)

- $\det(AB) = 48 - 60 = -12$; $\det A = -2$, $\det B = 6$, product = -12 ✓

3.3

(a)

- area scale factor = $\det M = 6$

(b)

- $M^{-1} = \frac{1}{6} \begin{pmatrix} 2 & -1 \\ 0 & 3 \end{pmatrix}$; this matrix undoes T