

- a. True. The columns of A are linearly dependent.
- b. True. See Exercise 30 in Section 3.2.
- c. False. See Theorem 3(c); in this case $\det 5A = 5^3 \det A$.
- d. False. Consider $A = \begin{bmatrix} 2 & 0 \\ 0 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 0 \\ 0 & 3 \end{bmatrix}$, and $A + B = \begin{bmatrix} 3 & 0 \\ 0 & 4 \end{bmatrix}$.
- e. False. By Theorem 6, $\det A^3 = 2^3$.
- f. False. See Theorem 3(b).
- g. True. See Theorem 3(c).
- h. True. See Theorem 3(a).
- i. False. See Theorem 5.
- j. False. See Theorem 3(c); this statement is false for $n \times n$ invertible matrices with n an even integer.
- k. True. See Theorems 6 and 5; $\det A^T A = (\det A)^2$.
 - l. False. The coefficient matrix must be invertible.
- m. False. The area of the **triangle** is 5.
- n. True. See Theorem 6; $\det A^3 = (\det A)^3$.
- o. False. See Exercise 31 in Section 3.2.
- p. True. See Theorem 6.