## **Reading Questions 16**

#### page 283: example 5

- 1. If A and B are similar matrices and  $\det(A^6) = 5$  then  $\det(B^5) = \frac{1}{5}$ .
- 2. For any square matrices A and B it is the case that  $\det(AB) = \det(A) \det(B)$ .
- 3. Suppose det(A) = 6 and S is an invertible matrix. What is  $det(S^{-1}AS)$ ?

# Section 6.2 Properties to determinants (Part 1)

### The Transpose

**P 1.** Let 
$$A = \begin{bmatrix} 1 & 2 & 0 \\ 2 & 2 & 1 \\ 0 & 2 & 1 \end{bmatrix}$$
. Compute  $\det(A^T)$ .  
**P 2.** Let  $A = \begin{bmatrix} 1 & 4 & 6 & 8 \\ 1 & 2 & 3 & 8 \\ 1 & 2 & 3 & 4 \\ 1 & 2 & 6 & 8 \end{bmatrix}$ . Compute the determinant of  $A$  using elementary row operations and determine if  $A$  is invertible.

and determine if A is invertible.

**P** 3. Given some numbers a, b, c, d, e and f such that

$$\det \begin{bmatrix} a & 1 & d \\ b & 1 & e \\ c & 1 & f \end{bmatrix} = 7,$$

find

$$\det \begin{bmatrix} a & 3 & d \\ b & 3 & e \\ c & 3 & f \end{bmatrix}.$$

### Similar Matrices

**P 4.** Let  $A = \begin{bmatrix} 1 & 3 & 0 & 3 \\ 0 & 3 & 0 & 3 \\ 0 & 0 & 3 & 3 \\ 0 & 0 & 0 & 2 \end{bmatrix}$ . Suppose A and B are similar matrices. Find det(B) and det(A<sup>-1</sup>).

**P 5.** If A can be reduced to I by applying exactly 8 row additions what is the determinant of A.

**P 6.** Compute the determinant of  $A^{-1}$ ,  $A^4$  and  $(A^2)^T$  from problem 2.