

**Instructions:** Show all work. Use exact answers unless otherwise asked to round.

1. Find the determinant of the matrix  $\begin{bmatrix} 6 & 3 & 2 & -1 & 0 \\ 5 & -3 & 4 & 7 & 0 \\ 0 & 1 & -1 & -2 & 4 \\ 8 & 2 & 3 & 1 & -2 \\ -3 & 0 & 9 & -1 & -6 \end{bmatrix}$  by any method.

2. If  $\det(A) = 4$  and  $\det(B) = 3$ , find the values of the following expressions if  $A$  and  $B$  are both  $n \times n$ .

a.  $\det(AB)$

e.  $\det(3A)$

b.  $\det(A^{-1})$

f.  $\det(B^{-1}AB)$

c.  $\det(A^5)$

g.  $\det(A^T)$

d.  $\det(-A^2B^T)$

h.  $\det[(AB)^{-1}]$