Name KEY Hour 1. 2. 3. 4. 5

Determinants

Find the value of each determinant.

1. $\begin{vmatrix} 10 & 6 \\ 5 & 5 \end{vmatrix}$ $50-30 = \boxed{20}$

2. $\begin{vmatrix} 8 & 5 \\ 6 & 1 \end{vmatrix}$ $8-30 = \boxed{-22}$

3. $\begin{vmatrix} -7 & 3 \\ -9 & 7 \end{vmatrix}$ $-49-(-27) = \boxed{-22}$

4. $\begin{vmatrix} -2 & 4 \\ 3 & -6 \end{vmatrix}$ $+12-12 = \boxed{0}$

5. $\begin{vmatrix} 2 & -7 \\ -5 & 3 \end{vmatrix}$ $6-35 = \boxed{-29}$

6. $\begin{vmatrix} -6 & -2 \\ 8 & 5 \end{vmatrix}$ $-30+(+16) = \boxed{-14}$

7. $\begin{vmatrix} -9 & 0 \\ -12 & -7 \end{vmatrix}$ $63-0 = \boxed{63}$

8. $\begin{vmatrix} 6 & 14 \\ -3 & -8 \end{vmatrix}$ $-48+(+42) = \boxed{-6}$

9. $\begin{vmatrix} 15 & 11 \\ 23 & 19 \end{vmatrix}$ $285-253 = \boxed{32}$

10. $\begin{vmatrix} 21 & 43 \\ 16 & 31 \end{vmatrix}$ $651-688 = \boxed{-37}$

Evaluate each determinant using expansion by minors.

11. $\begin{vmatrix} 3 & 1 & 2 \\ 0 & 6 & 4 \\ 2 & 5 & 1 \end{vmatrix}$

$3(6-20)$
$-[1(0-8)]$
$+2(0-12)$
$= 3(-14)+(+8)+(-24)$
$= \boxed{-58}$

12. $\begin{vmatrix} 7 & 3 & -4 \\ -2 & 9 & 6 \\ 0 & 0 & 0 \end{vmatrix}$

$7(0-0)$
$-[3(0-0)]$
$+-4(0-0)$
$\boxed{0}$

13. $\begin{vmatrix} -2 & 7 & -2 \\ 4 & 5 & 2 \\ 1 & 0 & -1 \end{vmatrix}$

$-2(-5+0)$
$-[7(-4+-2)]$
$+-2(0-5)$
$10+42+10$
$\boxed{62}$

Evaluate each determinant using diagonals.

14. $\begin{vmatrix} 1 & 1 & 1 \\ 3 & 9 & 5 \\ 8 & 7 & 4 \end{vmatrix}$

$36 + 40 + 21 - (72 + 35 + 12) = \boxed{-22}$

15. $\begin{vmatrix} 1 & 5 & 2 \\ -6 & -7 & 8 \\ 5 & 9 & -3 \end{vmatrix}$

$21 + 200 - 108 - (-70 + 72 + 90) = \boxed{21}$

16. $\begin{vmatrix} 8 & -9 & 0 \\ 1 & 5 & 4 \\ 6 & -2 & 3 \end{vmatrix}$

$120 - 216 + 0 - (90 - 64 - 27) = \boxed{-5}$

17. Solve for x if $\det\begin{bmatrix} 2 & x \\ 5 & -3 \end{bmatrix} = 24$

$-6 - (5x) = 24$

$-5x = 30$

$\boxed{x = -6}$