1. If $\begin{bmatrix} a-1 & a+2 \\ 2 & 8 \end{bmatrix} = \begin{bmatrix} 3 & 3b \\ 2 & a+2b \end{bmatrix}$ then find a+b=?

A) 2 B) 4 C) 6 D) 8 E) 10

2. If $A = \begin{bmatrix} 1 & -1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} a & -b \\ -1 & 3 \\ b & -a \end{bmatrix}$ and $A \cdot B = \begin{bmatrix} -2 \\ -3 \end{bmatrix}$,then find (a,b) = ?

A) (-1,2) B) (1,-2) C) (-1,-2)

D) (1,2) E) (1,1)

3. Let $A = \begin{bmatrix} a & 3 \\ -1 & ab+2 \end{bmatrix}$, $B = \begin{bmatrix} b & 4 \\ 2 & 1 \end{bmatrix}$ and $C = \begin{bmatrix} 1 & 7 \\ 1 & 1 \end{bmatrix}$. If $A + B = C$, then $a^2 + b^2 = ?$ $(a,b \in R)$

A) 5 B) 1 C) 2 D) 4 E) 6

4. Let $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 3 & 3 \\ 1 & 1 \end{bmatrix}$ and $X = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$. If $AX = B$, then $a+b+c+d = ?$

A) 0 B) 2 C) 4 D) 8 E) 12

5. If $m \cdot \begin{bmatrix} -2 & 1 \\ 1 & 2 \end{bmatrix} + n \cdot \begin{bmatrix} 0 & 2 \\ 1 & 3 \end{bmatrix} = \begin{bmatrix} 4 & 2 \\ 0 & 2 \end{bmatrix}$, find $m+n = ?$

A) 0 B) 1 C) 2 D) 3 E) 4

6. $\begin{vmatrix} \sin x & -\cos x \\ 2 & 2 \end{vmatrix} \cdot \begin{vmatrix} \sin x & -\cos x \\ -2 & 2 \end{vmatrix} = ?$

A) 4 cos2x B) 4 C) –4
D) cos2x E) –4 cos2x

7. If $A = \begin{bmatrix} -1 & 3 \\ -3 & 1 \end{bmatrix}$, find $A^{10} = ?$

A) $-\begin{bmatrix} 0 & -3 \\ -3 & 0 \end{bmatrix}$ B) $-2^{15}\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

C) $2^{10}\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ D) $2^{20}\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

E) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

8. Find A^{30}, if $A = \begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix}$?

A) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ B) $\begin{bmatrix} 1 & 90 \\ 0 & 1 \end{bmatrix}$ C) $\begin{bmatrix} 1 & 3^{20} \\ 0 & 1 \end{bmatrix}$

D) $\begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix}$ E) $\begin{bmatrix} 20 & 60 \\ 0 & 20 \end{bmatrix}$

9. Matrices $A = \begin{bmatrix} -2 \\ 0 \\ 1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 1 & a \end{bmatrix}$ are given. Find $|A \cdot B|$.

A) 0 B) 1 C) 2 D) a E) $2a$

10. If $A = \begin{bmatrix} -1 & 2 \\ 0 & 1 \end{bmatrix}$, find $A^{-1} = ?$

A) $\begin{bmatrix} -1 & 0 \\ 2 & 1 \end{bmatrix}$ B) $\begin{bmatrix} 0 & -1 \\ 1 & 2 \end{bmatrix}$

C) $\begin{bmatrix} 2 & 1 \\ -1 & 0 \end{bmatrix}$ D) $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$

E) $\begin{bmatrix} -1 & 2 \\ 0 & 1 \end{bmatrix}$

11. If $A=\begin{bmatrix} 4 & 3 \\ -6 & -4 \end{bmatrix}$,then A^{-1} is .....

A) $\begin{bmatrix} -2 & \frac{3}{2} \\ -3 & 2 \end{bmatrix}$ B) $\begin{bmatrix} 2 & \frac{3}{2} \\ -3 & -2 \end{bmatrix}$

C) $\begin{bmatrix} 2 & 3 \\ -3 & -2 \end{bmatrix}$ D) $\begin{bmatrix} -2 & \frac{-3}{2} \\ 3 & 2 \end{bmatrix}$

E) $\begin{bmatrix} -2 & \frac{-3}{2} \\ -3 & -2 \end{bmatrix}$

12. The matrix $A=\begin{bmatrix} x & 3-y \\ 4 & y-1 \end{bmatrix}$ is given. If $A=A^T$, find *y*.

A) –2 B) –1 C) 1 D) 2 E) 3

13. If $A=\begin{bmatrix} 5 & 1 \\ 2 & 4 \end{bmatrix}$ and $B=A^T-A$, find $B^2=?$

A) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ B) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

C) $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$ D) $\begin{bmatrix} 1 & 0 \\ 1 & -1 \end{bmatrix}$

E) $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$

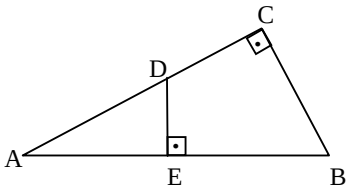
14. $\begin{vmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{vmatrix}=?$

A) 0 B) *abc* C) *ab* D) *bc* E) *ac*

15. If $\begin{vmatrix} 2 & 1 & 0 \\ 1 & 1 & -1 \\ 0 & 2 & 1 \end{vmatrix}=k$, then find $\begin{vmatrix} 4 & 2 & 0 \\ 2 & 2 & -2 \\ 0 & 6 & 3 \end{vmatrix}$ in terms of *k*.

A) 2*k* B) 3*k* C) 6*k* D) 12*k* E) 24*k*

16.



$|AB|=a$, $|BC|=b$, $|AC|=c$

$|AD|=d$, $|AE|=e$, $|DE|=f$ .Then

$\begin{vmatrix} 1 & 4 & 6 \\ a & b & c \\ d & f & e \end{vmatrix}=?$

A) ad+bf+ce B) a+b+c C) 1 D)0 E) $\frac{1}{2}$

17. Which of the following system of equations can be solved by $\begin{bmatrix} 2 & 1 & 3 \\ 1 & -1 & 2 \end{bmatrix}\cdot\begin{bmatrix} x \\ y \\ z \end{bmatrix}=\begin{bmatrix} 0 \\ 1 \end{bmatrix}$?

A) $\begin{matrix} 2x+y+3z=0 \\ x-y+2z=1 \end{matrix}$ B) $\begin{matrix} 2x+y+z=1 \\ x-y+z=0 \end{matrix}$

C) $\begin{matrix} 2x+y=0 \\ x-y=0 \end{matrix}$ D) $\begin{matrix} 2x+y=1 \\ x-y=1 \end{matrix}$

E) $\begin{matrix} 2x+y=3 \\ x-y=2 \\ y+3z=1 \end{matrix}$