

# Matrix Quiz ... Set 1

## Matrices

**Day 1: Simplify. Write "undefined" for expressions that are undefined.**

$$1) \begin{bmatrix} 3 & 6 \\ 2 & 5 \\ 5 & 3 \end{bmatrix} + \begin{bmatrix} 4 & 1 \\ -1 & -3 \\ 1 & 5 \end{bmatrix}$$

$$2) -2 \begin{bmatrix} 4 & -1 & -5 \\ 1 & 6 & -1 \end{bmatrix}$$

$$3) -5 \begin{bmatrix} -3 \\ -5 \\ 0 \end{bmatrix}$$

$$4) \begin{bmatrix} -3 \\ 1 \\ 3 \\ -2 \end{bmatrix} + \begin{bmatrix} -1 \\ -5 \\ 1 \\ 0 \end{bmatrix}$$

$$5) \begin{bmatrix} -5 & 2 \end{bmatrix} + \begin{bmatrix} -3 & 1 \end{bmatrix}$$

$$6) -4 \begin{bmatrix} 1 \\ 6 \\ -3 \\ -5 \end{bmatrix}$$

$$7) \begin{bmatrix} 4 & -5 & -5 \end{bmatrix} + 5 \begin{bmatrix} -4 & -3 & 5 \end{bmatrix}$$

$$8) \begin{bmatrix} -1 \\ -3 \\ 4 \end{bmatrix} - -3 \begin{bmatrix} -3 \\ -3 \\ 3 \end{bmatrix}$$

$$9) \begin{bmatrix} -6 & -5 & -5 \end{bmatrix} - 4 \begin{bmatrix} -2 & -1 & -1 \end{bmatrix}$$

$$10) \begin{bmatrix} -6 \\ 5 \\ 0 \end{bmatrix} + \begin{bmatrix} -4 \\ -2 \\ 6 \end{bmatrix} + \begin{bmatrix} 1 \\ 5 \\ 5 \end{bmatrix}$$

**Day 2: Simplify. Write "undefined" for expressions that are undefined.**

$$11) \begin{bmatrix} -6 & -4 & 1 \\ 3 & 5 & -6 \end{bmatrix} \cdot \begin{bmatrix} -3 & 3 \\ -5 & -2 \\ 2 & -3 \end{bmatrix}$$

$$12) \begin{bmatrix} 6 & -2 \\ 4 & 6 \end{bmatrix} \cdot \begin{bmatrix} -2 & -4 \\ 1 & -4 \end{bmatrix}$$

**Evaluate each determinant.**

$$13) \begin{vmatrix} 1 & -1 \\ 2 & 1 \end{vmatrix}$$

$$14) \begin{vmatrix} -1 & -1 \\ 0 & -3 \end{vmatrix}$$

$$15) \begin{vmatrix} -3 & -3 \\ 4 & 0 \end{vmatrix}$$

$$16) \begin{vmatrix} -5 & -1 & -5 \\ 5 & 5 & 2 \\ 5 & 3 & 3 \end{vmatrix}$$

# Matrix Quiz ... Set 1

## Answers

### Matrices

Day 1: Simplify. Write "undefined" for expressions that are undefined.

$$1) \begin{bmatrix} 3 & 6 \\ 2 & 5 \\ 5 & 3 \end{bmatrix} + \begin{bmatrix} 4 & 1 \\ -1 & -3 \\ 1 & 5 \end{bmatrix} = \begin{bmatrix} 7 & 7 \\ 1 & 2 \\ 6 & 8 \end{bmatrix}$$

$$2) -2 \begin{bmatrix} 4 & -1 & -5 \\ 1 & 6 & -1 \end{bmatrix} = \begin{bmatrix} -8 & 2 & 10 \\ -2 & -12 & 2 \end{bmatrix}$$

$$3) -5 \begin{bmatrix} -3 \\ -5 \\ 0 \end{bmatrix} = \begin{bmatrix} 15 \\ 25 \\ 0 \end{bmatrix}$$

$$4) \begin{bmatrix} -3 \\ 1 \\ 3 \\ -2 \end{bmatrix} + \begin{bmatrix} -1 \\ -5 \\ 1 \\ 0 \end{bmatrix} = \begin{bmatrix} -4 \\ -4 \\ 4 \\ -2 \end{bmatrix}$$

$$5) \begin{bmatrix} -5 & 2 \\ -8 & 3 \end{bmatrix} + \begin{bmatrix} -3 & 1 \end{bmatrix}$$

$$6) -4 \begin{bmatrix} 1 \\ 6 \\ -3 \\ -5 \end{bmatrix} = \begin{bmatrix} -4 \\ -24 \\ 12 \\ 20 \end{bmatrix}$$

$$7) \begin{bmatrix} 4 & -5 & -5 \\ -16 & -20 & 20 \end{bmatrix} + 5 \begin{bmatrix} -4 & -3 & 5 \end{bmatrix}$$

$$8) \begin{bmatrix} -1 \\ -3 \\ 4 \end{bmatrix} - -3 \begin{bmatrix} -3 \\ -3 \\ 3 \end{bmatrix} = \begin{bmatrix} -10 \\ -12 \\ 13 \end{bmatrix}$$

$$9) \begin{bmatrix} -6 & -5 & -5 \\ 2 & -1 & -1 \end{bmatrix} - 4 \begin{bmatrix} -2 & -1 & -1 \end{bmatrix}$$

$$10) \begin{bmatrix} -6 \\ 5 \\ 0 \end{bmatrix} + \begin{bmatrix} -4 \\ -2 \\ 6 \end{bmatrix} + \begin{bmatrix} 1 \\ 5 \\ 5 \end{bmatrix} = \begin{bmatrix} -9 \\ 8 \\ 11 \end{bmatrix}$$

Day 2: Simplify. Write "undefined" for expressions that are undefined.

$$11) \begin{bmatrix} -6 & -4 & 1 \\ 3 & 5 & -6 \end{bmatrix} \cdot \begin{bmatrix} -3 & 3 \\ -5 & -2 \\ 2 & -3 \end{bmatrix} = \begin{bmatrix} 40 & -13 \\ -46 & 17 \end{bmatrix}$$

$$12) \begin{bmatrix} 6 & -2 \\ 4 & 6 \end{bmatrix} \cdot \begin{bmatrix} -2 & -4 \\ 1 & -4 \end{bmatrix} = \begin{bmatrix} -14 & -16 \\ -2 & -40 \end{bmatrix}$$

Evaluate each determinant.

$$13) \begin{vmatrix} 1 & -1 \\ 2 & 1 \end{vmatrix} = 3$$

$$14) \begin{vmatrix} -1 & -1 \\ 0 & -3 \end{vmatrix} = 3$$

$$15) \begin{vmatrix} -3 & -3 \\ 4 & 0 \end{vmatrix} = 12$$

$$16) \begin{vmatrix} -5 & -1 & -5 \\ 5 & 5 & 2 \\ 5 & 3 & 3 \end{vmatrix} = 10$$

# Matrix Quiz ... Set 1

Find the inverse of each matrix.

$$17) \begin{bmatrix} -9 & 8 \\ 4 & 6 \end{bmatrix}$$

$$18) \begin{bmatrix} 9 & 1 \\ 1 & 0 \end{bmatrix}$$

$$19) \begin{bmatrix} -8 & 7 \\ 0 & -2 \end{bmatrix}$$

$$20) \begin{bmatrix} -6 & 0 & 4 \\ -5 & -5 & 5 \\ 0 & -3 & 0 \end{bmatrix}$$

Day 3: Solve each system by substitution.

$$21) \begin{aligned} 3x - 2y &= -6 \\ -3x + y &= 3 \end{aligned}$$

$$22) \begin{aligned} -3x + 7y &= 0 \\ y &= -3x - 24 \end{aligned}$$

Solve each system by elimination.

$$23) \begin{aligned} 3a - 3b + c &= 14 \\ -a + b + 2c &= 0 \\ 2a + 3b - 4c &= -30 \end{aligned}$$

$$24) \begin{aligned} -5y - z &= -2 \\ -6x - 4y + 3z &= -18 \\ -4x + 4y + 6z &= -4 \end{aligned}$$

$$25) \begin{aligned} x + 5y + 5z &= -23 \\ x - 2y - 5z &= 17 \\ 5x + y - 5z &= 5 \end{aligned}$$

$$26) \begin{aligned} r - 5s + 6t &= 11 \\ r + 3s - 6t &= -13 \\ -4r + 4s - 5t &= -16 \end{aligned}$$

27) Jimmy's school is selling tickets to a play. On the first day of ticket sales the school sold 6 senior citizen tickets and 2 child tickets for a total of \$46. The school took in \$144 on the second day by selling 14 senior citizen tickets and 8 child tickets. What is the price each of one senior citizen ticket and one child ticket?

28) Darryl and Kathryn each improved their yards by planting daylilies and ivy. They bought their supplies from the same store. Darryl spent \$123 on 8 daylilies and 7 pots of ivy. Kathryn spent \$92 on 2 daylilies and 14 pots of ivy. Find the cost of one daylily and the cost of one pot of ivy.

# Matrix Quiz ... Set 1

## Answers

Find the inverse of each matrix.

$$17) \begin{bmatrix} -9 & 8 \\ 4 & 6 \end{bmatrix} \begin{bmatrix} -\frac{3}{43} & \frac{4}{43} \\ \frac{2}{43} & \frac{9}{86} \end{bmatrix}$$

$$19) \begin{bmatrix} -8 & 7 \\ 0 & -2 \end{bmatrix} \begin{bmatrix} -\frac{1}{8} & -\frac{7}{16} \\ 0 & -\frac{1}{2} \end{bmatrix}$$

$$18) \begin{bmatrix} 9 & 1 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} 0 & 1 \\ 1 & -9 \end{bmatrix}$$

$$20) \begin{bmatrix} -6 & 0 & 4 \\ -5 & -5 & 5 \\ 0 & -3 & 0 \end{bmatrix} \begin{bmatrix} -\frac{1}{2} & \frac{2}{5} & -\frac{2}{3} \\ 0 & 0 & -\frac{1}{3} \\ -\frac{1}{2} & \frac{3}{5} & -1 \end{bmatrix}$$

Day 3: Solve each system by substitution.

$$21) \begin{aligned} 3x - 2y &= -6 \\ -3x + y &= 3 \end{aligned}$$

$(0, 3)$

$$22) \begin{aligned} -3x + 7y &= 0 \\ y &= -3x - 24 \end{aligned}$$

$(-7, -3)$

Solve each system by elimination.

$$23) \begin{aligned} 3a - 3b + c &= 14 \\ -a + b + 2c &= 0 \\ 2a + 3b - 4c &= -30 \end{aligned}$$

$(-2, -6, 2)$

$$24) \begin{aligned} -5y - z &= -2 \\ -6x - 4y + 3z &= -18 \\ -4x + 4y + 6z &= -4 \end{aligned}$$

$(4, 0, 2)$

$$25) \begin{aligned} x + 5y + 5z &= -23 \\ x - 2y - 5z &= 17 \\ 5x + y - 5z &= 5 \end{aligned}$$

$(-3, 0, -4)$

$$26) \begin{aligned} r - 5s + 6t &= 11 \\ r + 3s - 6t &= -13 \\ -4r + 4s - 5t &= -16 \end{aligned}$$

$(2, 3, 4)$

27) Jimmy's school is selling tickets to a play. On the first day of ticket sales the school sold 6 senior citizen tickets and 2 child tickets for a total of \$46. The school took in \$144 on the second day by selling 14 senior citizen tickets and 8 child tickets. What is the price each of one senior citizen ticket and one child ticket?

senior citizen ticket: \$4, child ticket: \$11

28) Darryl and Kathryn each improved their yards by planting daylilies and ivy. They bought their supplies from the same store. Darryl spent \$123 on 8 daylilies and 7 pots of ivy. Kathryn spent \$92 on 2 daylilies and 14 pots of ivy. Find the cost of one daylily and the cost of one pot of ivy.

daylily: \$11, pot of ivy: \$5