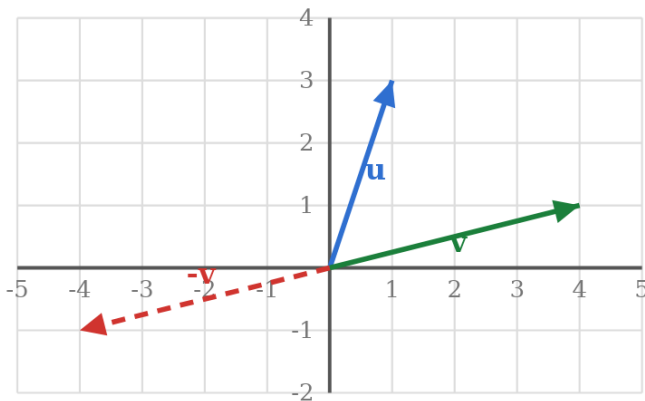




Vectors

1 Use the grid to find the difference of the two vectors.



A

$$\vec{u} - \vec{v} = [-3, -2]$$

B

$$\vec{u} - \vec{v} = [-3, 2]$$

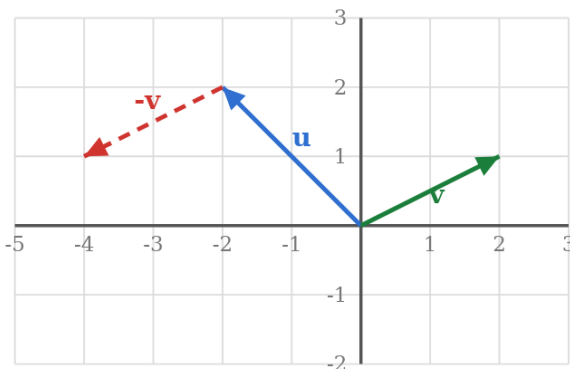
C

$$\vec{u} - \vec{v} = [3, 2]$$

D

$$\vec{u} - \vec{v} = [-2, 1]$$

2 Use the grid to find the difference of the two vectors.



A

$$\vec{u} - \vec{v} = \begin{bmatrix} -4 \\ -1 \end{bmatrix}$$

B

$$\vec{u} - \vec{v} = \begin{bmatrix} 1 \\ -4 \end{bmatrix}$$

C

$$\vec{u} - \vec{v} = \begin{bmatrix} 4 \\ 1 \end{bmatrix}$$

D

$$\vec{u} - \vec{v} = \begin{bmatrix} -4 \\ 1 \end{bmatrix}$$

3 Find the difference $\vec{u} - \vec{v}$.

$$\vec{u} = [-1, 1], \quad \vec{v} = [3, -2]$$

A

$$\vec{u} - \vec{v} = [4, -3]$$

B

$$\vec{u} - \vec{v} = [-4, 3]$$

C

$$\vec{u} - \vec{v} = [4, 3]$$

D

$$\vec{u} - \vec{v} = [-4, -3]$$

4 Find the sum $\vec{u} + \vec{v}$.

$$\vec{u} = [4, 4], \quad \vec{v} = [-2, 1]$$

A

$$\vec{u} + \vec{v} = [3, 4]$$

B

$$\vec{u} + \vec{v} = [5, 2]$$

C

$$\vec{u} + \vec{v} = [2, 5]$$

D

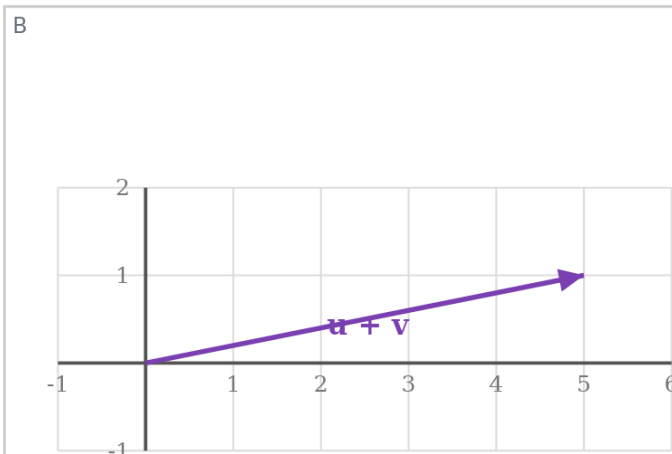
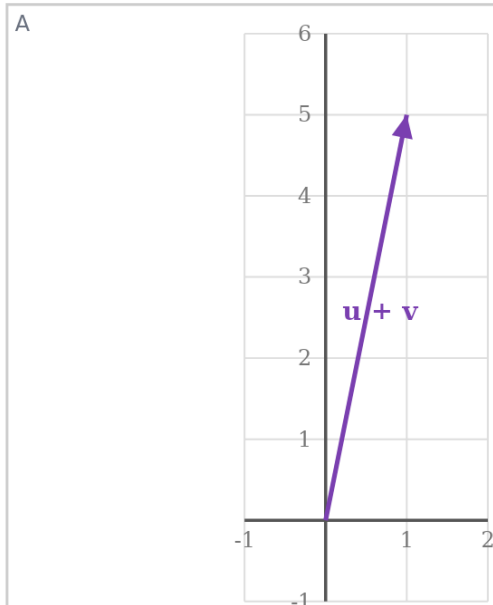
$$\vec{u} + \vec{v} = [2, -5]$$



Vectors

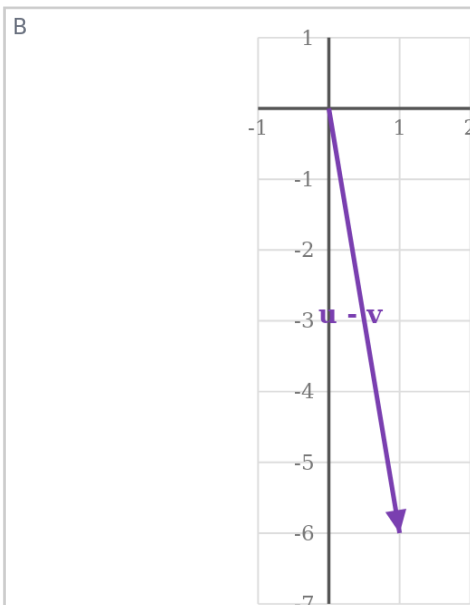
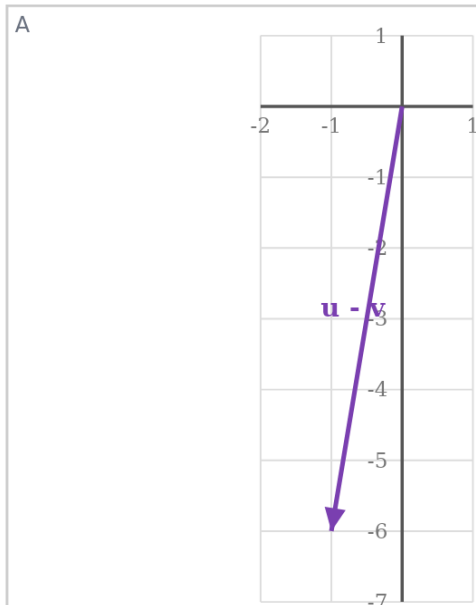
5 Choose the grid that shows the sum vector $u + v$.

$$\vec{u} = [2, -3], \quad \vec{v} = [3, 4]$$



6 Choose the grid that shows the difference vector $u - v$.

$$\vec{u} = \begin{bmatrix} -1 \\ -2 \end{bmatrix}, \quad \vec{v} = \begin{bmatrix} -2 \\ 4 \end{bmatrix}$$



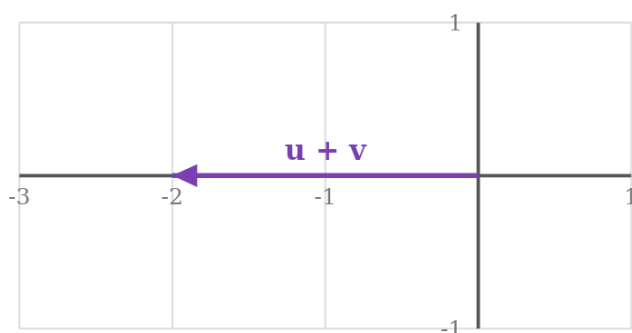


Vectors

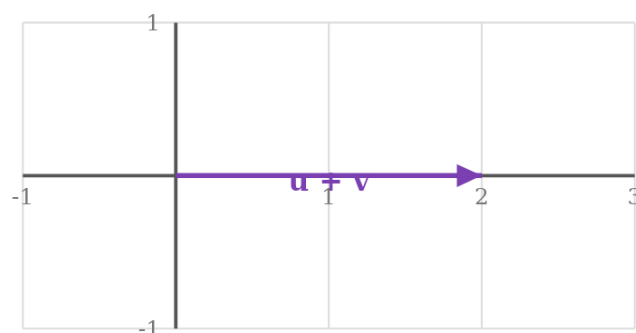
7 Choose the grid that shows the sum vector $u + v$.

$$\vec{u} = \begin{bmatrix} -4 \\ -3 \end{bmatrix}, \quad \vec{v} = \begin{bmatrix} 2 \\ 3 \end{bmatrix}$$

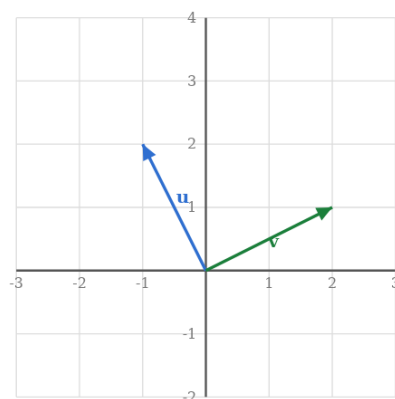
A



B



8 Use the grid to find the sum of the two vectors.



A

$$\vec{u} + \vec{v} = \begin{bmatrix} 1 \\ -3 \end{bmatrix}$$

B

$$\vec{u} + \vec{v} = \begin{bmatrix} -1 \\ -3 \end{bmatrix}$$

C

$$\vec{u} + \vec{v} = \begin{bmatrix} 1 \\ 3 \end{bmatrix}$$

D

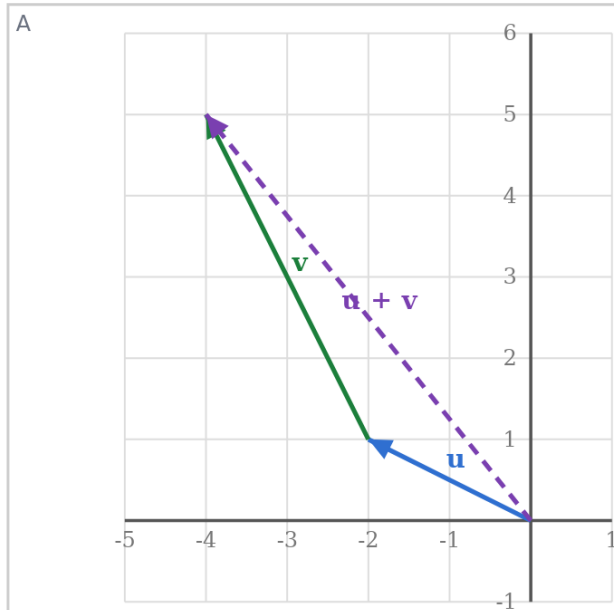
$$\vec{u} + \vec{v} = \begin{bmatrix} -1 \\ 3 \end{bmatrix}$$



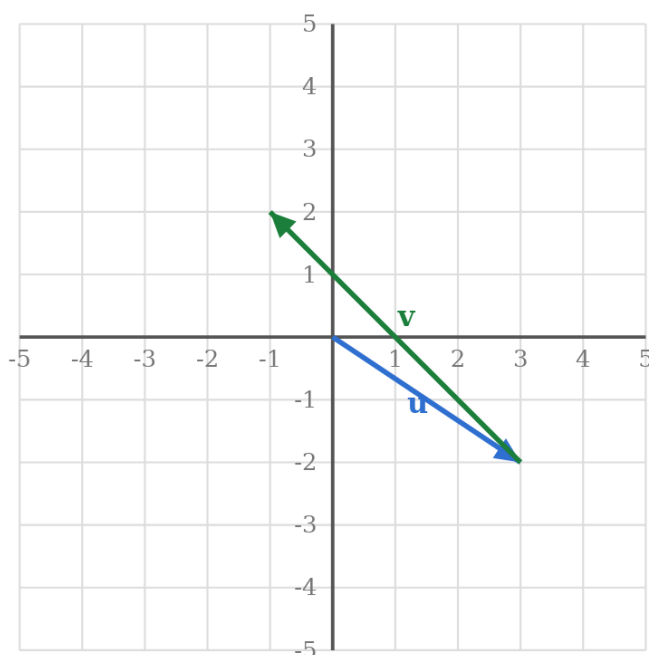
Vectors

- 9 Choose the grid that shows u and v tip to tail with $u + v$ as a dashed vector.

$$\vec{u} = \begin{bmatrix} 2 \\ -1 \end{bmatrix}, \quad \vec{v} = \begin{bmatrix} 2 \\ -4 \end{bmatrix}$$



- 10 Use the grid to find the sum of the two vectors.



A

$$\vec{u} + \vec{v} = [-1, 2]$$

B

$$\vec{u} + \vec{v} = [-1, -2]$$

C

$$\vec{u} + \vec{v} = [1, 2]$$

D

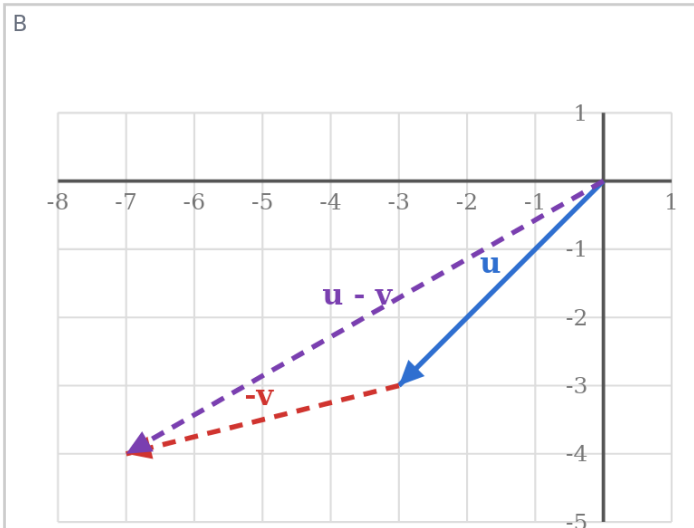
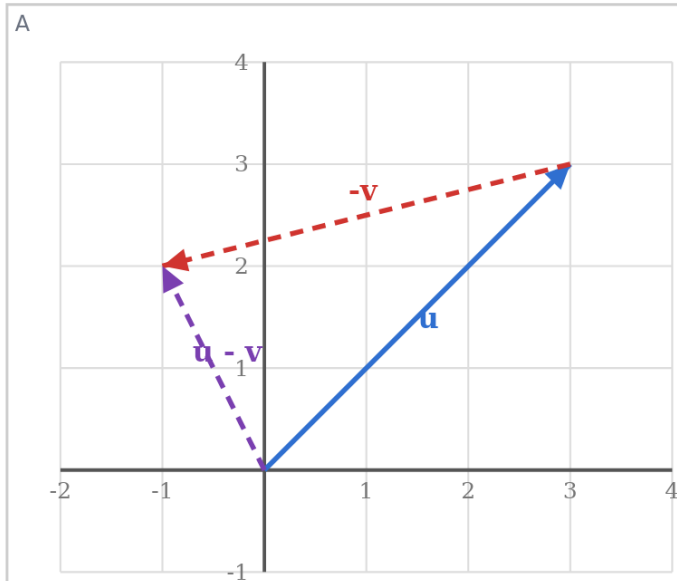
$$\vec{u} + \vec{v} = [0, 1]$$



Vectors

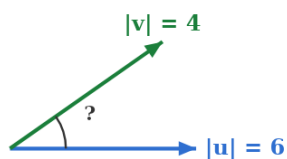
11 Choose the grid that shows u and v tip to tail with $u - v$ as a dashed vector.

$$\vec{u} = [-3, -3], \quad \vec{v} = [4, 1]$$



12 The two vectors have magnitudes $|u| = 6$ and $|v| = 4$, and $u \cdot v = 19.66$. Find the angle between them.

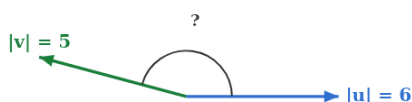
$$u \cdot v = 19.66$$



A	20°
B	35°
C	45°
D	50°

13 The two vectors have magnitudes $|u| = 6$ and $|v| = 5$, and $u \cdot v = -28.98$. Find the angle between them.

$$u \cdot v = -28.98$$



A	160°
B	165°
C	150°
D	155°



Vectors

14 Find the acute angle between the two lines.

15 Find the dot product $u \cdot v$.

$$\vec{u} = [-1, 2], \vec{v} = [1, -6]$$

A	$\vec{u} \cdot \vec{v} = -12$
B	$\vec{u} \cdot \vec{v} = -13$
C	$\vec{u} \cdot \vec{v} = -6$
D	$\vec{u} \cdot \vec{v} = -16$

16 Find the dot product $u \cdot v$.

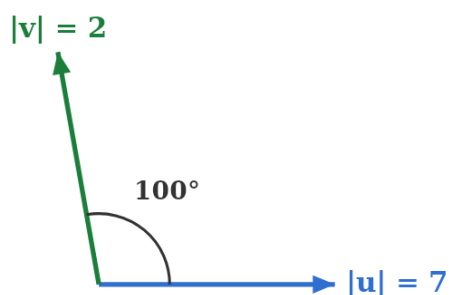
$$\vec{u} = [1, 5], \vec{v} = [-1, -4] \quad \vec{u} \cdot \vec{v} = u_x v_x + u_y v_y$$

A	$\vec{u} \cdot \vec{v} = -27$
B	$\vec{u} \cdot \vec{v} = -19$
C	$\vec{u} \cdot \vec{v} = -21$
D	$\vec{u} \cdot \vec{v} = -16$

17 Find the acute angle between the two planes.

$$\vec{n}_1 = \begin{pmatrix} -2 \\ 0 \\ 1 \end{pmatrix} \quad \vec{n}_2 = \begin{pmatrix} -2 \\ 1 \\ 2 \end{pmatrix}$$

18 The vectors have magnitudes $|u| = 7$ and $|v| = 2$ with an angle of 100° between them. Find $u \cdot v$.



A	$\vec{u} \cdot \vec{v} = -9.31$
B	$\vec{u} \cdot \vec{v} = 2.18$
C	$\vec{u} \cdot \vec{v} = -10.32$
D	$\vec{u} \cdot \vec{v} = -2.43$

19 Find the magnitude of v .

$$\vec{v} = [-6, 8]$$

A	$ \vec{v} = 16$	B	$ \vec{v} = 9$
C	$ \vec{v} = 12$	D	$ \vec{v} = 10$

20 Find the magnitude of the vector from its components.

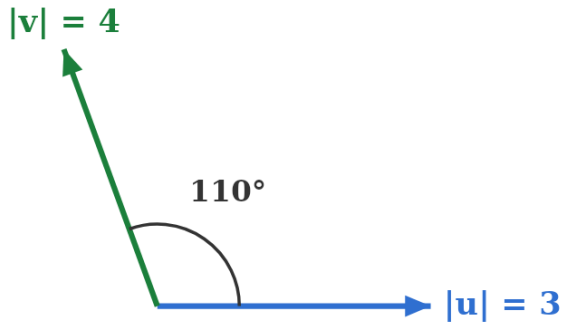
$$u_x = 3, \quad u_y = -4$$

A	$ \vec{u} = 4$	B	$ \vec{u} = 3$
C	$ \vec{u} = 1$	D	$ \vec{u} = 5$



Vectors

21 The vectors have magnitudes $|u| = 3$ and $|v| = 4$ with an angle of 110° between them. Find $u \cdot v$.



$$u \cdot v = |u| |v| \cos(\theta)$$

A

$$\vec{u} \cdot \vec{v} = 3.13$$

B

$$\vec{u} \cdot \vec{v} = 2.20$$

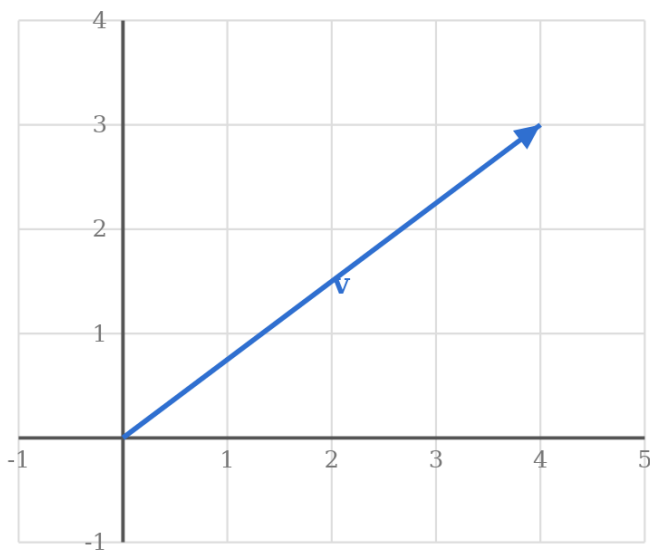
C

$$\vec{u} \cdot \vec{v} = -4.10$$

D

$$\vec{u} \cdot \vec{v} = -8.99$$

22 Find the magnitude of the vector.



A

$$|\vec{v}| = 9$$

B

$$|\vec{v}| = 2$$

C

$$|\vec{v}| = 7$$

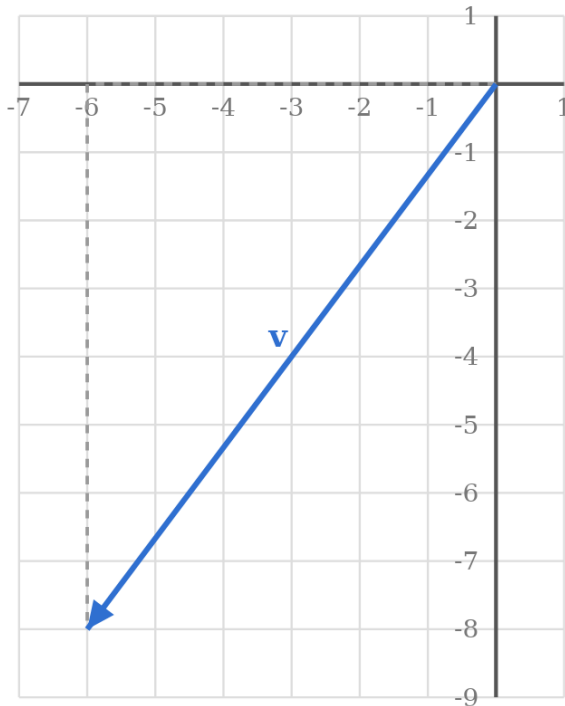
D

$$|\vec{v}| = 5$$



Vectors

23 Find the magnitude of the vector.



A

$$|\vec{v}| = 8$$

B

$$|\vec{v}| = 10$$

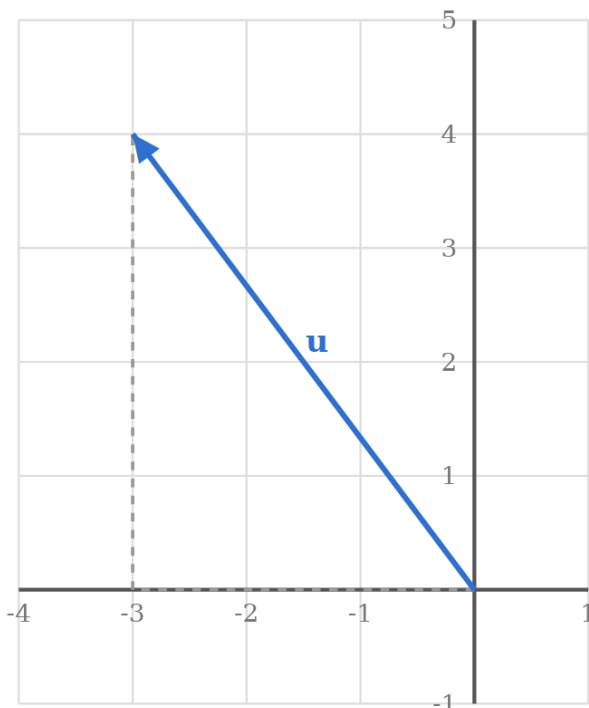
C

$$|\vec{v}| = 6$$

D

$$|\vec{v}| = 14$$

24 Find the magnitude of the vector.



A

$$|\vec{u}| = 3$$

B

$$|\vec{u}| = 2$$

C

$$|\vec{u}| = 5$$

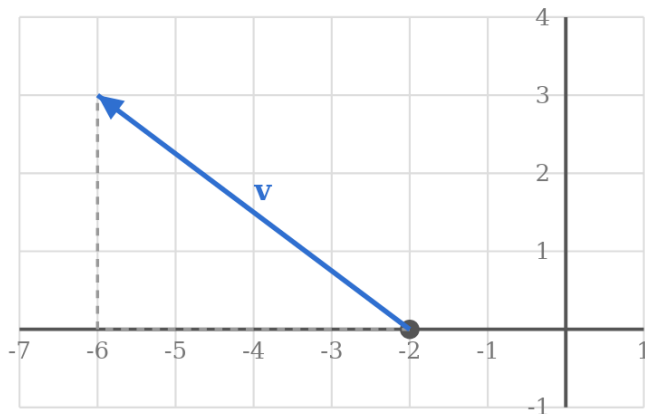
D

$$|\vec{u}| = 7$$



Vectors

25 Find the magnitude of the vector.



A

$$|\vec{v}| = 3$$

B

$$|\vec{v}| = 5$$

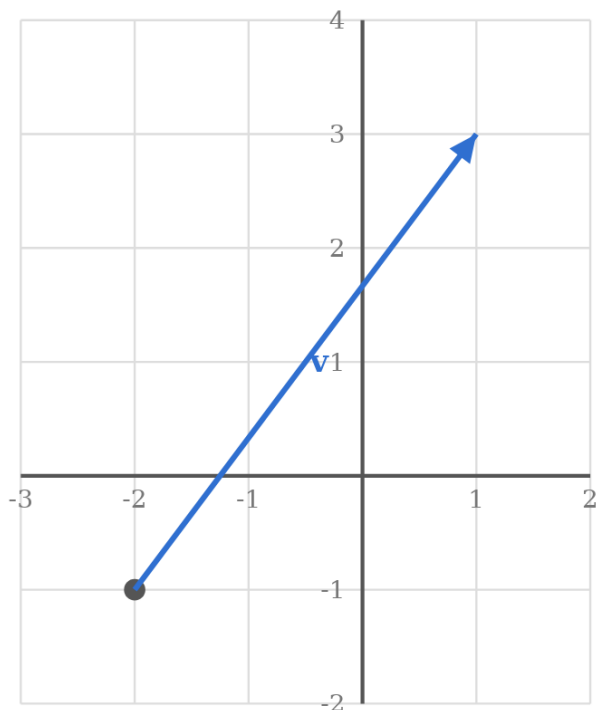
C

$$|\vec{v}| = 10$$

D

$$|\vec{v}| = 4$$

26 Find the magnitude of the vector.



A

$$|\vec{v}| = 9$$

B

$$|\vec{v}| = 8$$

C

$$|\vec{v}| = 5$$

D

$$|\vec{v}| = 4$$



Vectors

27 Find the magnitude of $\vec{v}$.

$$\vec{v} = [-1, -4, 8]$$

A

$$|\vec{v}| = 15$$

B

$$|\vec{v}| = 9$$

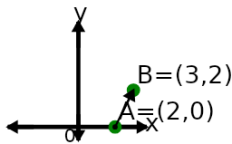
C

$$|\vec{v}| = 8$$

D

$$|\vec{v}| = 4$$

29 Find the (x,y) change to go from point A to point B on the diagram



A (2,-1)

B (0,2)

C (2,1)

D (-2,1)

E (1,2)

F (1,-2)

28 Find the vector $a \cdot \vec{u}$.

$$\vec{u} = \begin{bmatrix} 3 \\ -2 \end{bmatrix}, \quad a = -2$$

A

$$\begin{bmatrix} -6 \\ -4 \end{bmatrix}$$

B

$$\begin{bmatrix} 6 \\ 4 \end{bmatrix}$$

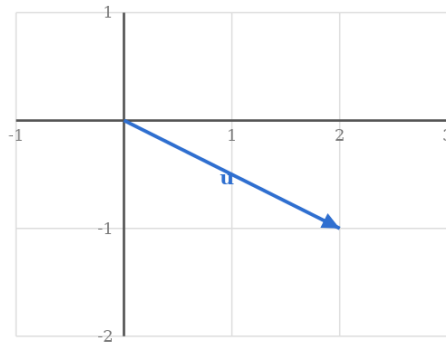
C

$$\begin{bmatrix} -6 \\ 4 \end{bmatrix}$$

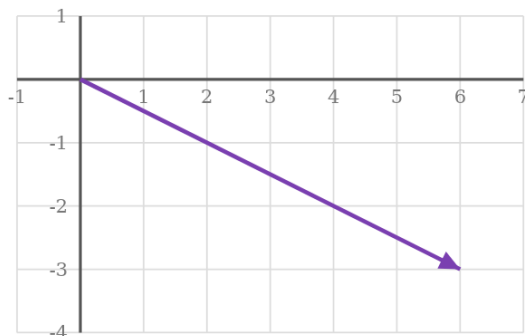
D

$$\begin{bmatrix} 4 \\ -6 \end{bmatrix}$$

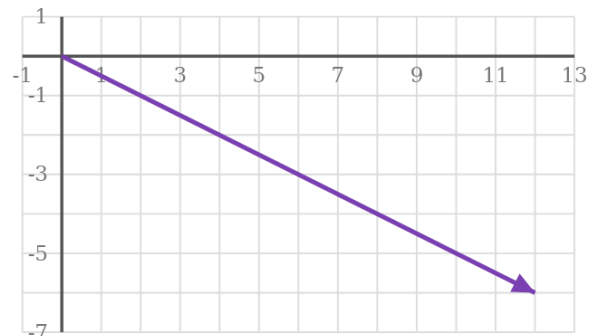
30 The vector $\vec{u}$ is shown. Choose the grid that shows $a \cdot \vec{u}$ for $a = 3$.



A



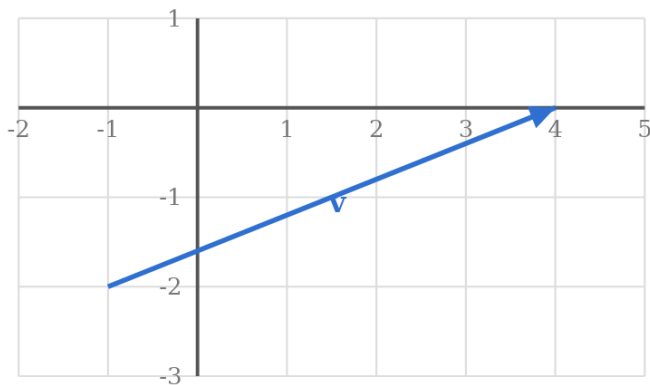
B





Vectors

31 Write the vector shown on the grid in row matrix form.



A

$$[5, -2]$$

B

$$[2, 5]$$

C

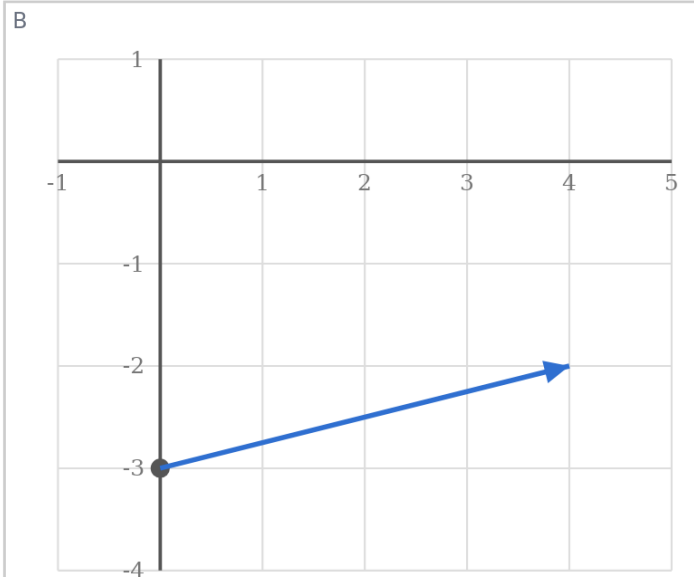
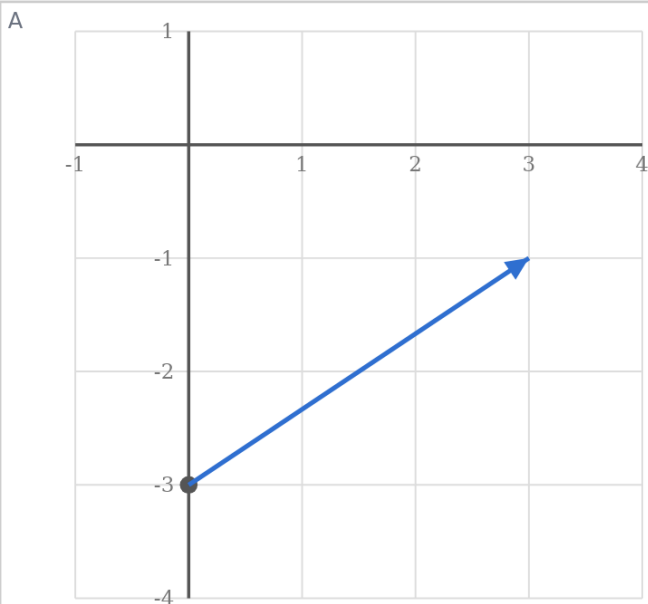
$$[5, 2]$$

D

$$[-5, 2]$$

32 Choose the grid that shows this vector with its base at the marked point.

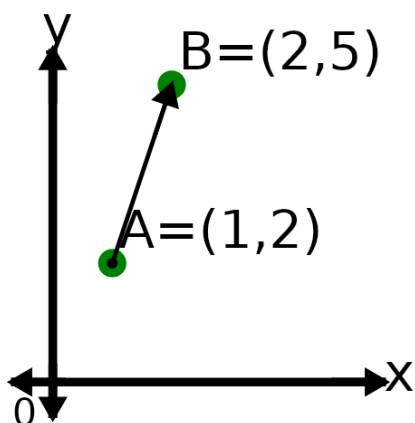
$$\vec{v} = [3, 2]$$





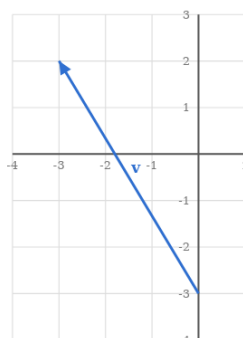
Vectors

33 Find the (x,y) change to go from point A to point B on the diagram



A (3,1)	B (1,2)	C (2,3)
D (1,-3)	E (1,3)	F (-1,3)

34 Write the vector shown on the grid in column matrix form.



A $\begin{bmatrix} -3 \\ 5 \end{bmatrix}$	B $\begin{bmatrix} 3 \\ 5 \end{bmatrix}$
C $\begin{bmatrix} 5 \\ -3 \end{bmatrix}$	D $\begin{bmatrix} 3 \\ -5 \end{bmatrix}$