

6.3 Exercises

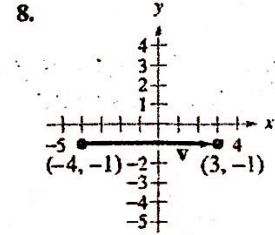
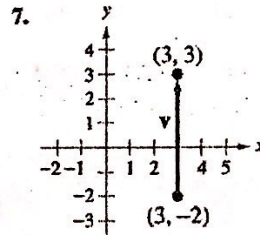
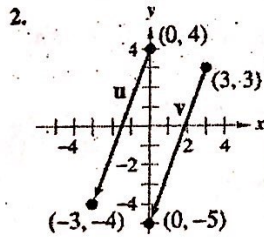
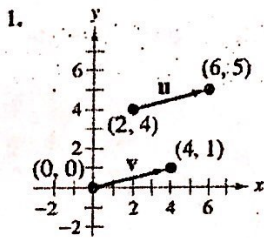
See www.CalcChat.com for worked-out solutions to odd-numbered exercises.

Vocabulary Check

Fill in the blanks.

1. A _____ can be used to represent a quantity that involves both magnitude and direction.
2. The directed line segment \vec{PQ} has _____ point P and _____ point Q .
3. The _____ of the directed line segment \vec{PQ} is denoted by $\|\vec{PQ}\|$.
4. The set of all directed line segments that are equivalent to a given directed line segment \vec{PQ} is a _____ v in the plane.
5. The directed line segment whose initial point is the origin is said to be in _____.
6. A vector that has a magnitude of 1 is called a _____.
7. The two basic vector operations are scalar _____ and vector _____.
8. The vector $u + v$ is called the _____ of vector addition.
9. The vector sum $v_1i + v_2j$ is called a _____ of the vectors i and j , and the scalars v_1 and v_2 are called the _____ and _____ components of v , respectively.

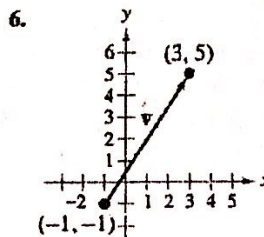
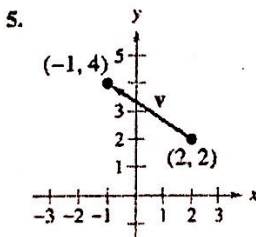
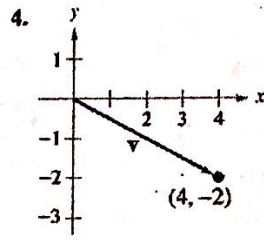
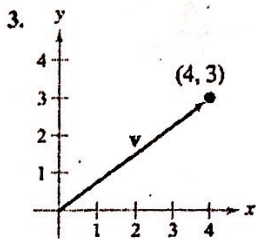
In Exercises 1 and 2, show that $u = v$.



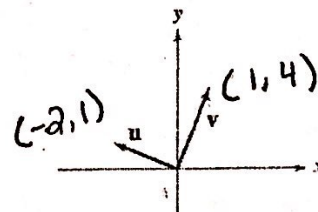
Initial Point Terminal Point

- | | |
|--------------------------|------------------------------|
| 9. $(\frac{2}{3}, 1)$ | $(1, \frac{2}{5})$ |
| 10. $(\frac{7}{2}, 0)$ | $(0, -\frac{7}{2})$ |
| 11. $(-\frac{2}{3}, -1)$ | $(\frac{1}{2}, \frac{4}{5})$ |
| 12. $(\frac{3}{2}, -2)$ | $(1, \frac{2}{5})$ |

In Exercises 3–12, find the component form and the magnitude of the vector v .



In Exercises 13–18, use the figure to sketch a graph of the specified vector. To print an enlarged copy of the graph, go to the website www.mathgraphs.com.



- | | |
|-------------------|------------------------|
| 13. $-v$ | 14. $3u$ |
| 15. $\vec{u} + v$ | 16. $u - v$ |
| 17. $u + 2v$ | 18. $v - \frac{1}{2}u$ |

