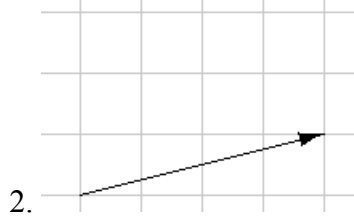
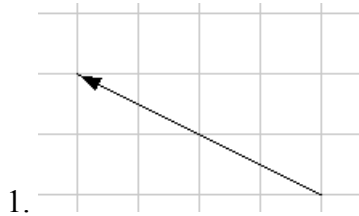
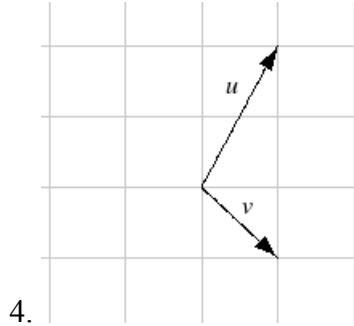
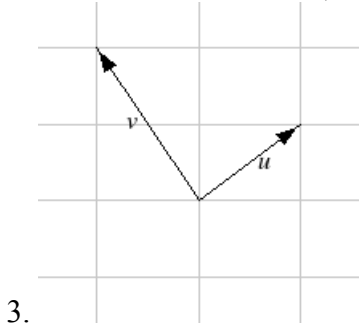


HW 6.4.1: Vectors

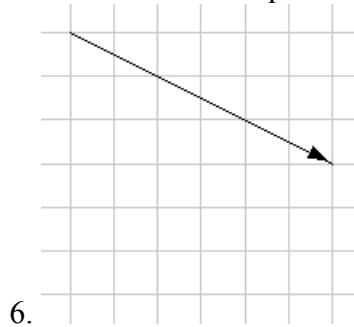
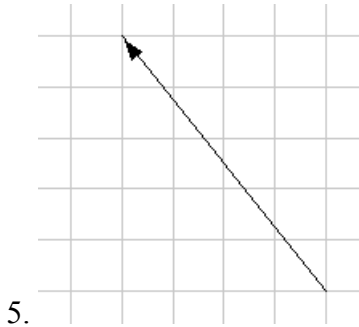
Write the vector shown in component form.



Given the vectors shown, sketch $\vec{u} + \vec{v}$, $\vec{u} - \vec{v}$, and $2\vec{u}$.



Write each vector below as a combination of the vectors \vec{u} and \vec{v} from question #3.



From the given magnitude and direction in standard position, write the vector in component form.

7. Magnitude: 6, Direction: 45°

8. Magnitude: 10, Direction: 120°

9. Magnitude: 8, Direction: 220°

10. Magnitude: 7, Direction: 305°



Find the magnitude (also called the norm) and direction of the vector.

11. $\langle 0, 4 \rangle$

12. $\langle -3, 0 \rangle$

13. $\langle 6, 5 \rangle$

14. $\langle 3, 7 \rangle$

15. $\langle -2, 1 \rangle$

16. $\langle -10, 13 \rangle$

17. $\langle 2, -5 \rangle$

18. $\langle 8, -4 \rangle$

19. $\langle -4, -6 \rangle$

20. $\langle -1, 9 \rangle$

Using the vectors given, compute $\vec{u} + \vec{v}$, $\vec{u} - \vec{v}$, and $2\vec{u} - 3\vec{v}$.

21. $\vec{u} = \langle 2, -3 \rangle$, $\vec{v} = \langle 1, 5 \rangle$

22. $\vec{u} = \langle -3, 4 \rangle$, $\vec{v} = \langle -2, 1 \rangle$

23. Find the magnitude and direction of the resultant $\vec{u} + \vec{v}$. Given $\|\vec{u}\| = 6$, $\theta_u = 45^\circ$ and $\|\vec{v}\| = 10$, $\theta_v = 120^\circ$.

24. Find the magnitude and direction of the resultant $\vec{u} + \vec{v}$. Given $\|\vec{u}\| = 8$, $\theta_u = 115^\circ$ and $\|\vec{v}\| = 10$, $\theta_v = 80^\circ$.

25. A woman leaves home and walks 3 miles west, then 2 miles southwest. How far from home is she, and in what direction must she walk to head directly home?



26. A boat leaves the marina and sails 6 miles north, then 2 miles northeast. How far from the marina is the boat, and in what direction must it sail to head directly back to the marina?
27. A person starts walking from home and walks 4 miles east, 2 miles southeast, 5 miles south, 4 miles southwest, and 2 miles east. How far have they walked? If they walked straight home, how far would they have to walk?
28. A person starts walking from home and walks 4 miles east, 7 miles southeast, 6 miles south, 5 miles southwest, and 3 miles east. How far have they walked? If they walked straight home, how far would they have to walk?