

1. Identify a vector that moves $(3, 4)$ to $(5, 7)$.

2. Take V to be the vector given by

$$V = \langle 2, -1 \rangle.$$

Determine $2V$, $-V$, $\|V\|$, and $\hat{V}$ and sketch a picture to illustrate these quantities.

3. A particle moves at constant velocity. It is at the point $(-1, 5)$ at time 3 and at the point $(4, 8)$ at time 9. Write an equation that models the motion of the particle.

4. Write the following functions using set notation:

$$g(x) = x^3 + x, \quad h(x) = \log_2(x - 2), \quad k(x) = 2^x - 1.$$

5. Sketch the function f that is given by

$$f(x) = \left(\frac{1}{2}\right)^{x+2} + 1.$$

Identify any asymptotes of the function.

6. Sketch the function f that is given by

$$f(x) = \log_2(x - 1) - 2.$$

Identify any asymptotes of the function.

7. Calculate $\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right) \star \left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ and explain its meaning.

8. Take p to be the point given by $p = \left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$. Calculate p^{-1} and explain its meaning.

9. Rotate the point $(2, 4)$ about $(3, 3)$ by $\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$.

10. A particle rotates counterclockwise around the point $(0, 0)$ at constant speed. It is at the point $(3, 0)$ at time 0. Write an equation that models the position of the particle at time t .

11. A particle rotates counterclockwise around the point $(1, 2)$ at constant speed. It is at the point $(5, 2)$ at time 0 and at the point $(1, 6)$ at time 3. Write an equation that models the position of the particle at time t .

12. Take A and B to be two real numbers so that

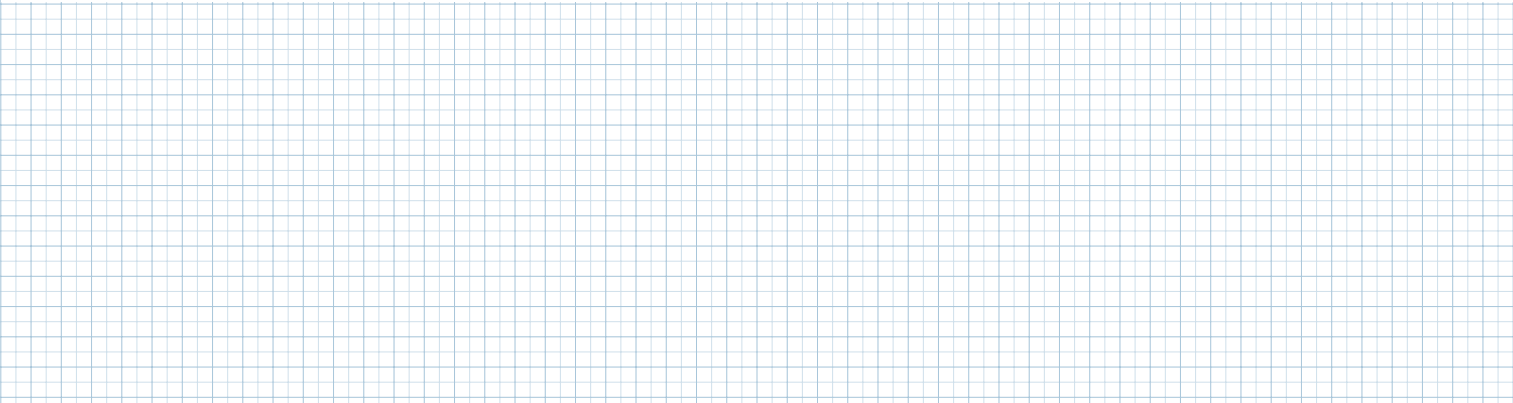
$$\cos(A) = -\frac{1}{3}, \quad \sin(A) = \frac{2\sqrt{2}}{3}, \quad \cos(B) = \frac{2}{5} \quad \text{and} \quad \sin(B) = -\frac{\sqrt{21}}{5}.$$

Determine $\cos(A + B)$ and $\sin(A + B)$.

13. Take f to be the function given by

$$f(x) = (x - 4)^2.$$

Sketch $\text{Recip}(f)$.



14. Take f to be the function whose sketch is given below. Sketch $\text{Recip}(f)$.

