Vectors Worksheet - Answer Key

1. Find the magnitude of $\langle -1, 5 \rangle$.

 $\sqrt{26}$

 $\langle -6, 1 \rangle$

2. Find the direction of $-\frac{\sqrt{3}}{2}\mathbf{i} + \frac{\sqrt{3}}{2}\mathbf{j}$. $\frac{3\pi}{4}$

3. Describe the graph of $f(x) = \langle x, x^2 \rangle$. It is the graph of a straight line.

4. Perform the vector operation $\langle -9, 5 \rangle - \langle -3, 4 \rangle$.

5. Perform the vector operation $\langle -\frac{1}{3}, \frac{2}{5} \rangle - 3 \langle -\frac{1}{9}, \frac{1}{5} \rangle$. $\langle 0, -\frac{1}{5} \rangle$ 6. Normalize the vector $\langle 3, 4 \rangle$.

 $\left\langle \frac{3}{5}, \frac{4}{5} \right\rangle$

- 7. Given $f(t) = \langle 1, t^2, \frac{1}{t} \rangle$, find f(-1). $f(t) = \langle 1, 1, 1 \rangle$
- 8. Is $f(x,y) = x^2 + y^2$ a vector function? No, f is a scalar function.
- 9. Find the direction of f(u.v) = u + v. f(u, v) is not a vector.
- 10. Find the value of a if $a\mathbf{i} + \frac{1}{4}\mathbf{j}$ is a unit vector. $\pm \sqrt{\frac{15}{16}}$

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