10-3 Additional Practice

Vectors

Write each vector in component form. Identify its magnitude and direction.

1. initial point (4, 6); terminal point (–2, 3)
2. initial point (–5, 8); terminal point (4, –1)

Add each vector pair.

3. $\overrightarrow{MN} = \langle 10, 5 \rangle$ and $\overrightarrow{NO} = \langle -2, 5 \rangle$
4. $\overrightarrow{MN} = \langle -3, 7 \rangle$ and $\overrightarrow{NO} = \langle -1, -2 \rangle$

Find the components, magnitude, and direction of $\vec{s} - \vec{t}$ for each given vector pair. Round to the nearest hundredth.

5. $\vec{s} = \langle 2, -6 \rangle$, $\vec{t} = \langle -1, 4 \rangle$
6. $\vec{s} = \langle 4, 7 \rangle$, $\vec{t} = \langle 0, -1 \rangle$

Multiply each vector by the given scalar. Find the components, magnitude, and direction. Round to the nearest hundredth.

7. $\vec{t} = \langle 2, 3 \rangle$ scalar = 8
8. $\vec{t} = \langle -4, 8 \rangle$ scalar = 6
9. Reflect $\overrightarrow{EF} = \langle 5, 3 \rangle$ across the x-axis using a matrix.

10. Reflect $\overrightarrow{GH} = \langle 2, 1 \rangle$ across the y-axis using matrices.

11. Emelia is paddling a kayak in the ocean at 5 mph headed 20° north of west. The current of the ocean is 3 mph at a direction that is 20° east of south. What are the magnitude and direction of the path of her kayak as she paddles across the ocean?
12. Describe how the magnitude and the direction of $\vec{t} = \langle x, y \rangle$ is affected when $\vec{t}$ is multiplied by a scalar of z. a scalar of $-z$?