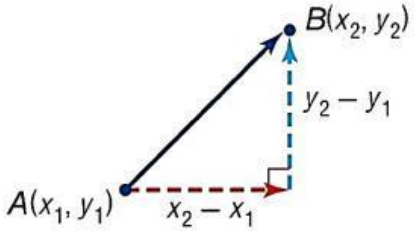
Vector Components and Magnitude

KeyConcept Component Form of a Vector

The component form of a vector $\overrightarrow{AB}$ with initial point $A(x_1, y_1)$ and terminal point $B(x_2, y_2)$ is given by

$$\langle x_2 - x_1, y_2 - y_1 \rangle.$$

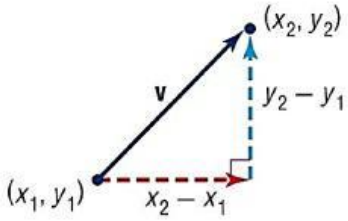


KeyConcept Magnitude of a Vector in the Coordinate Plane

If **v** is a vector with initial point (x_1, y_1) and terminal point (x_2, y_2), then the magnitude of **v** is given by

$$|\mathbf{v}| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}.$$

If **v** has a component form of $\langle a, b \rangle$, then $|\mathbf{v}| = \sqrt{a^2 + b^2}$.



Let P = (-2, 2), Q= (3, 4), R= (-2, 5) and S = (2, -8).

Find the component form and magnitude of the vector.

1. $\overrightarrow{PQ}$

Magnitude (leave in sqrt form): sqrt( )

2. $\overrightarrow{RS}$

Magnitude (leave in sqrt form): sqrt( )

3. $\overrightarrow{QR}$

Magnitude (leave in sqrt form): sqrt( )

LIVEWORKSHEETS