What you'll Learn About
- Two Dimensional Vectors/Vector Operations/Unit Vectors
- Direction Angle/Applications of Vectors

Vector

Direction

Length (magnitude)

Find the component form and magnitude of the vector where P = (-3,4), Q = (-5, 2), R = (-1, 3) and S = (4, 7)

Initial ↖ $\vec{PQ}$ ↗ terminal terminal − Initial

A) $\vec{PQ}$

$\langle x_T - x_I, y_T - y_I \rangle$

$\langle -5-(-3), 2-4 \rangle$

$\langle -2, -2 \rangle$

$mag = \sqrt{x^2+y^2}$

$= \sqrt{(-2)^2+(-2)^2}$

$= \sqrt{8}$

Initial ↖ $\vec{RS}$ ↗ terminal

B) $\vec{RS}$

$\langle 4-(-1), 7-3 \rangle$

$\langle 5, 4 \rangle$

$mag = \sqrt{5^2+4^2}$

$= \sqrt{25+16}$

$= \sqrt{41}$

(-5,2) (4,7)

C) $3\vec{QS}$

$3\langle 4-(-5), 7-2 \rangle$

$3\langle 9, 5 \rangle$

$\langle 27, 15 \rangle$

$mag = \sqrt{27^2+15^2}$

$= \sqrt{954}$

(-5,2) (-1,3) (-3,4) (5,7)

D) $2\vec{QR} + \vec{PS}$

$2\langle -1-(-5), 3-2 \rangle$

$2\langle 4, 1 \rangle + \langle 5-(-3), 7-4 \rangle$

$\langle 8, 2 \rangle + \langle 8, 3 \rangle$

$\langle 16, 5 \rangle$

$mag = \sqrt{16^2+5^2}$

$= \sqrt{281}$