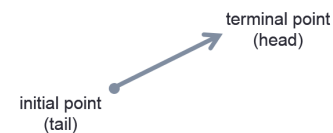


Intro to **VECTORS** and Vector Operations

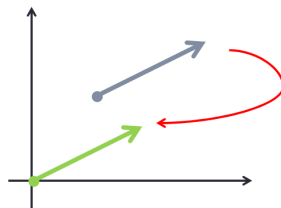
What is a vector?

- A vector, \vec{v} is a directed line segment that has both magnitude (size/length) and direction (angle).



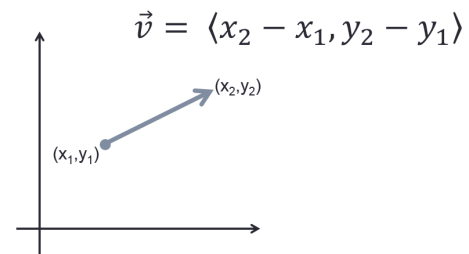
a Vector in Standard Position ... Position Vector

- has its initial point (tail) at the origin.
(same magnitude and direction)



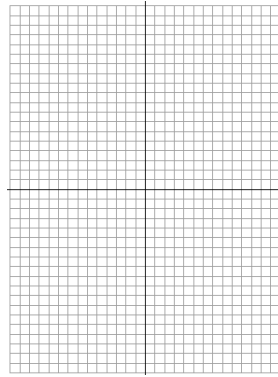
Component Form of a Vector ...

- in standard form: $\vec{v} = \langle x, y \rangle$



Example 1 ... initial point: $(-3, -11)$
terminal point: $(9, -1)$

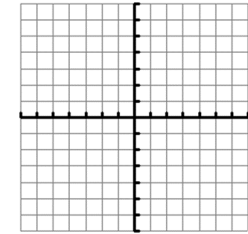
a) Find component form.



b) Sketch in standard position.

Example 2 ... initial point: $(3, 5)$
terminal point: $(-1, -1)$

a) Find component form.



b) Sketch in standard position.

Vector Operations

• Given $\vec{u} = \langle 2, -9 \rangle$ and $\vec{v} = \langle -6, 8 \rangle$.

• Find:

a) $\vec{u} + \vec{v}$

b) $\vec{v} - \vec{u}$

c) $-2\vec{u} - 3\vec{v}$

d) $\vec{u} + \frac{1}{2}\vec{v}$