Vector Addition
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General Physics Lab 1

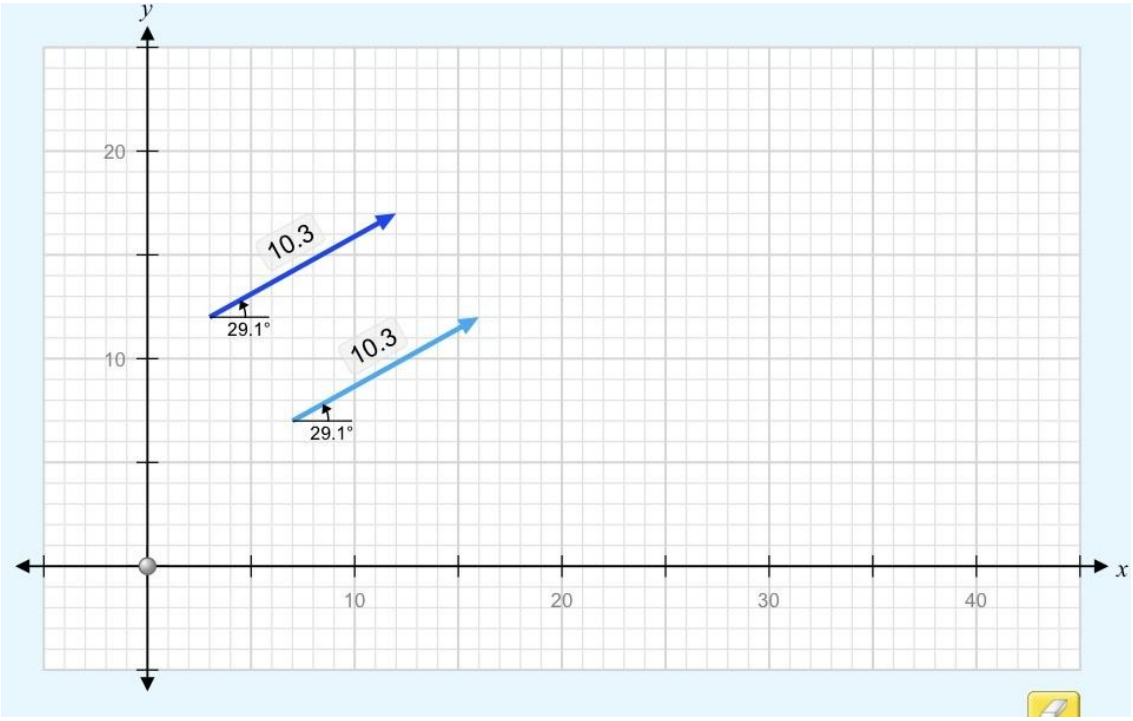
Main body:
The purpose of this experiment is to experimentally verify the rules for vector addition by graphical and by components. A vector is an object that has a direction and a magnitude. The direction is from bottom to top. They can be represented graphically and algebraically. Vectors can be scaled, added, multiplied and subtracted. Vectors are commonly used for different forces by indicating size and direction of the force. In this experiment we are focused on how vectors can be added.
To add vectors with two given, translate the second one until it connects to the first one's head. The segment from the bottom of the first vector to the top of the second one would be the sum of the vectors.
• The tail of the vector is restricted to the bounds of the graph. To prevent overly large vectors,

the tip of the vector cannot be stretched beyond the bounds of the graph. However, the tip of the vector is allowed to escape the graph when translating the vector.
• The model allows 180° to have a positive or negative sign. In polar mode, the sign will depend on the direction of approach — positive if rotating counterclockwise, negative if rotating clockwise. To change the sign, click the vector head and move the cursor slightly up or down. In Cartesian mode,180° will always be positive due to the way the y-coordinate snaps to zero.
• The vector labels are grabbable and can be used to translate the vectors within the graph. This may be particularly useful for touch devices with smaller screens.
• The goal of the projection-style component view is to collect the components along the axes. It is not meant to show true projection onto the axes.

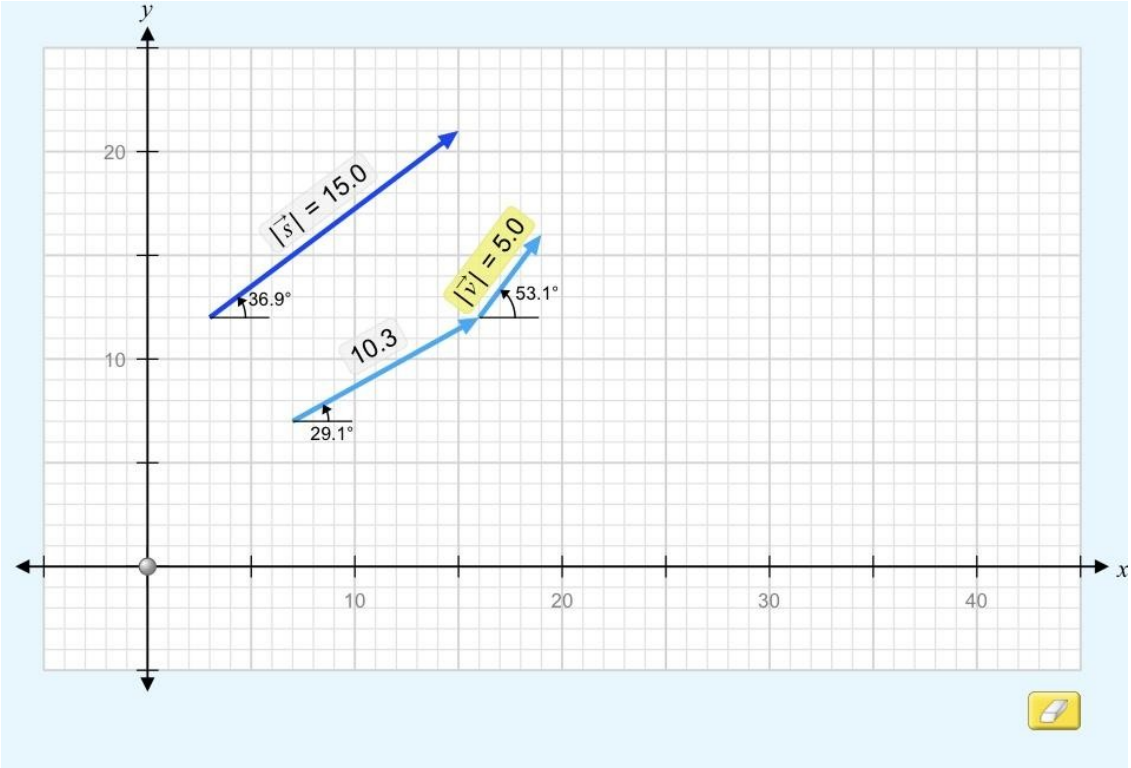
Data

Vector A=10.0, 36.9 degrees . Vector B=5.0, 53.1 degrees

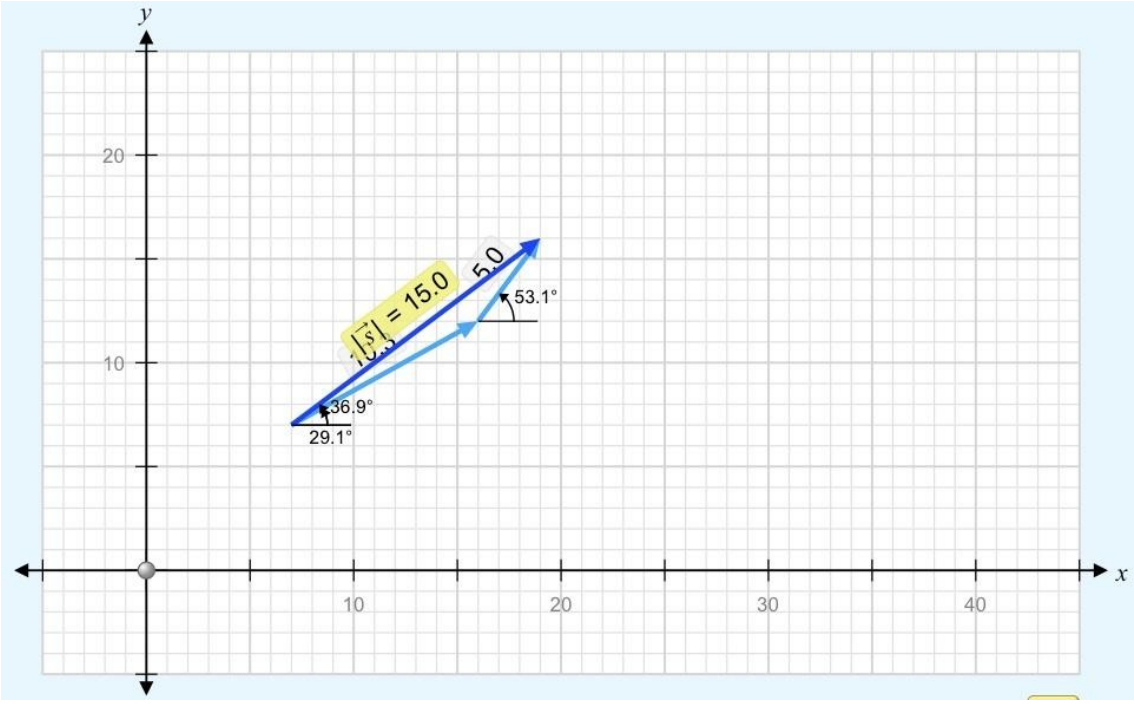
Place vector A on the grap. It doesn't have to be in the origin as long as it has the correct magnitude and direction. (Picture 1)

1. 

Then you want to add vector B to the graph at the head of vector A. (Picture 2)

2. 

The sum will be the distance from the bottom of Vector A to the head of Vector B. The sum will already be visible when you add vector A to the graph, but it will not be correct until you add Vector B. (Picture 3)

3. 

Calculations

Vector A = 10.3, 36.9

Vector B = 5.0, 53.1
The sum = 15.0, 29.1

Vector A + Vector B = ?
10.3 + 5.0 = 15.0

Conclusion
The result is just a simple addition after the graph work. The only errors that will occur in this experiment is if Vector B isn't placed in the right position. In my experience there aren't any errors. This experiment showed what a vector is and how to add them. It also verified the rules for vector addition by graphical and by components.