Subtracting Vectors

Subtraction means add the opposite

Given V(A) and V(B)

- To determine and characterize V(A) – V(B)
- 1. Find the opposite of V(B)
- 2. Add V(A) plus the opposite of V(B)
- 3. The sum from Step #2 is the hypotenuse of a right triangle. Use Pythagorean Thm to determine the size of this hypotenuse.
- 4. This hypotenuse forms an angle with a leg of the triangle. Use arctan(opposite/adjacent) to determine this angle.

EXAMPLE

- V(A) = 11 m North; V(B) = 13 m East
- 1. -V(B) = 13 m West
- 2. V(A) + -(V(B)) = hypotenuse N of W
- 3. 11^2 + 13^2 = c^2; c = 17
- 4. arctan (13/11) = 50 degrees

Group Activity

- Determine and Characterize these differences.
- 1. (9.0 m North) minus (5.5 m West)
- 2. (13.0 m West) minus (17 m South)
- 3. (59 m North) minus (89 m South)

Group Activity

- Determine and Characterize these differences:
- 1. V(A) = (4, 5); V(B) = (7, 9)
- 2. V(A) = (-5, 11); V(B) = (-7, 15)
- 3. V(A) = (25, 39); V(B) = (123, -93)