Vectors

Adding Vectors Graphically:

1) Draw the first vector to the correct length and in the correct direction.
2) Draw the second vector (correct length and direction) starting at the tip of the first
3) The resultant vector starts at the tail of the first vector and ends at the tip of the second

Adding Vectors Analytically:

1) Break each vector up into x- and y-components.
2) Add all x-components together to find R_x. Add all y-components together to find R_y.
3) Find the magnitude and direction of the resultant vector:

$$R = \sqrt{R_x^2 + R_y^2}$$

$$\theta = \tan^{-1}\left(\frac{R_y}{R_x}\right)$$

4) Check that the angle is in the correct quadrant (if not add 180°) and that your magnitude seems reasonable.