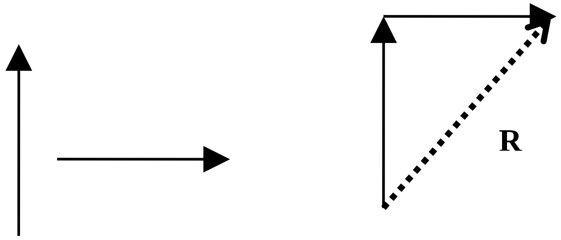
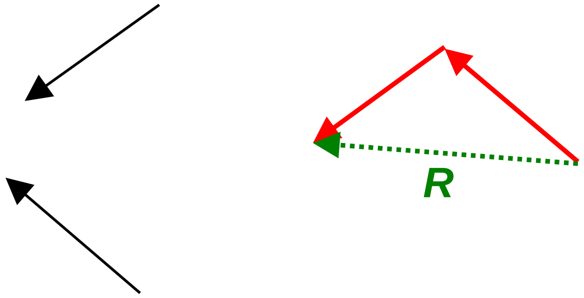
Name ______________________________

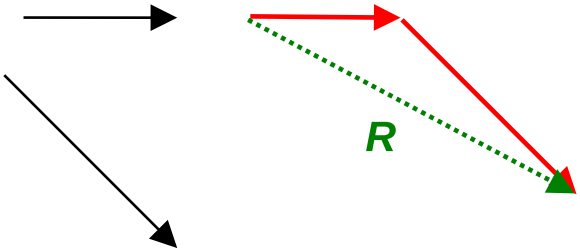
Vector Addition Worksheet

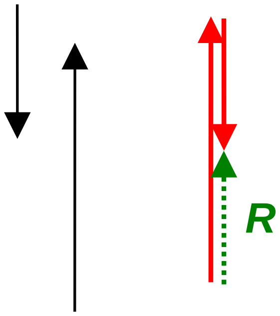
Directions: *Graphically add each pair of vectors shown below in its box, making sure to show the vector addition* as well as *the resultant with a dotted line and arrowhead.* If there is no resultant, ***write "no R".***

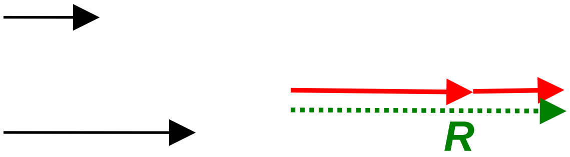
Example:

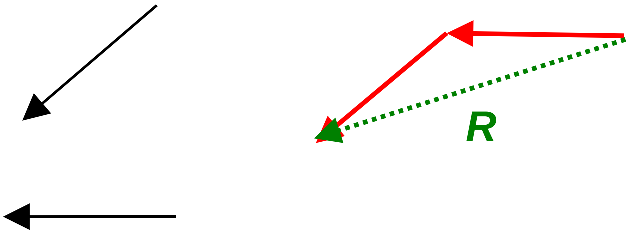


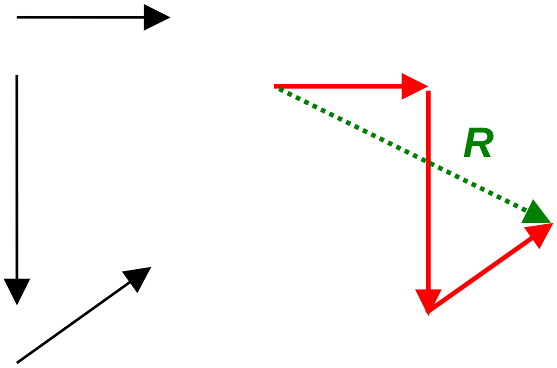


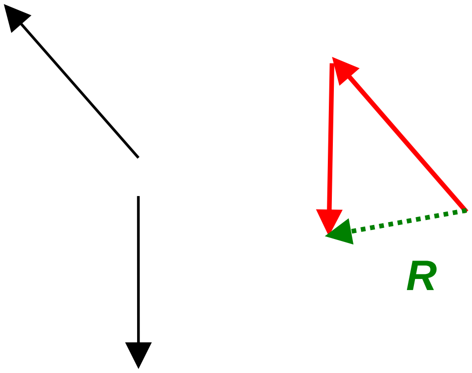






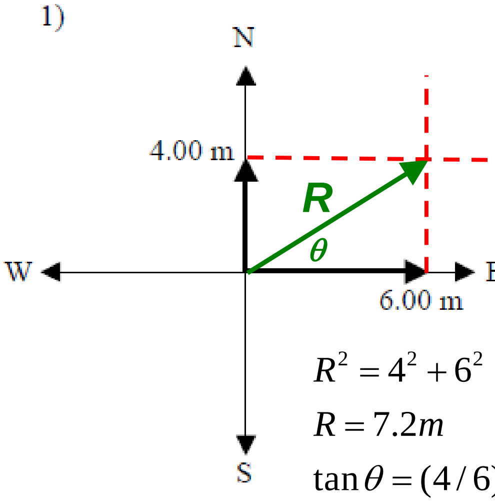






Vectors Practice: Sketch, then calculate the magnitude and direction of the resultant for each of the following pairs of vectors.

1)



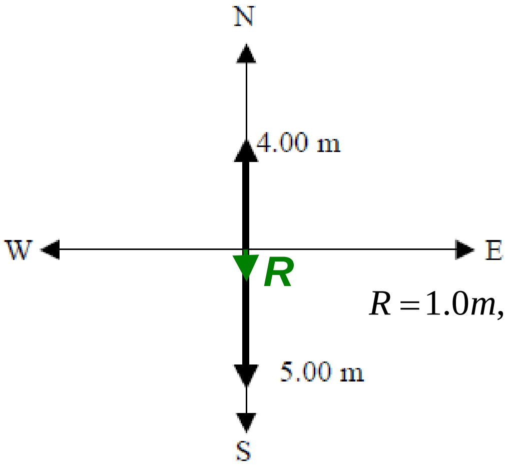
$$R^2 = 4^2 + 6^2 = 52$$

$$R = 7.2m$$

$$\tan\theta = (4/6)$$

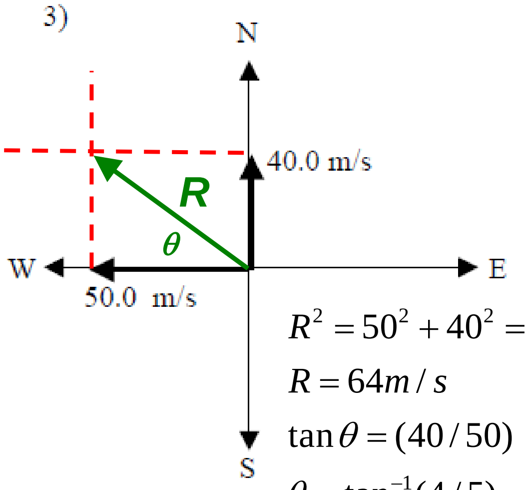
$$\theta = \tan^{-1}(4/6) = 34^o\ NofE$$

2)



$$R = 1.0m, South$$

3)



$$R^2 = 50^2 + 40^2 = 4100$$

$$R = 64m/s$$

$$\tan\theta = (40/50)$$

$$\theta = \tan^{-1}(4/5) = 38.7^o\ NofW$$

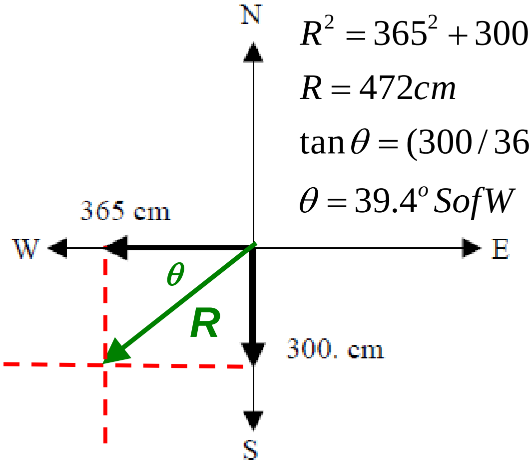
4)

$$R^2 = 365^2 + 300^2 = 223225$$

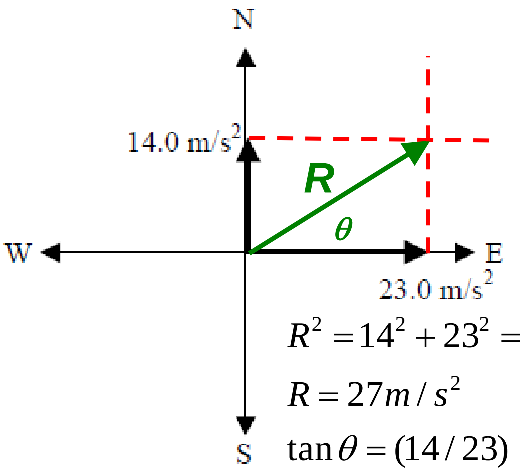
$$R = 472cm$$

$$\tan\theta = (300/365)$$

$$\theta = 39.4^o\ SofW$$



5)



$$R^2 = 14^2 + 23^2 = 725$$

$$R = 27m/s^2$$

$$\tan\theta = (14/23)$$

$$\theta = \tan^{-1}(14/23) = 31.3^o\ NofE$$

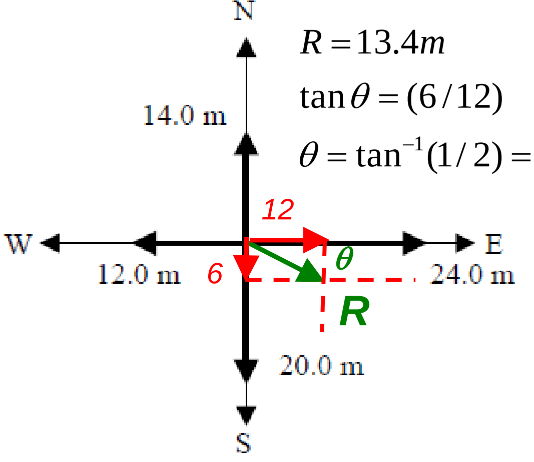
6)

$$R^2 = 6^2 + 12^2 = 180$$

$$R = 13.4m$$

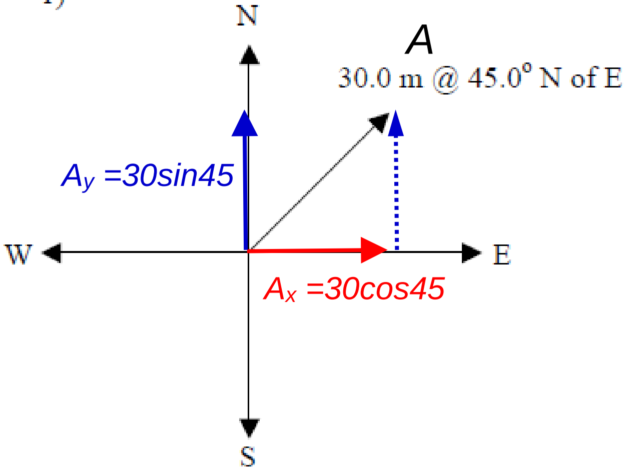
$$\tan\theta = (6/12)$$

$$\theta = \tan^{-1}(1/2) = 26.6^o\ SofE$$

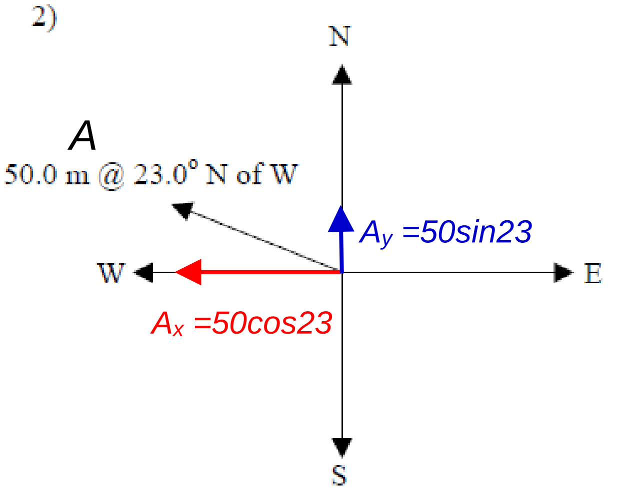


Vectors Practice: Sketch, then calculate the components of the following vectors.

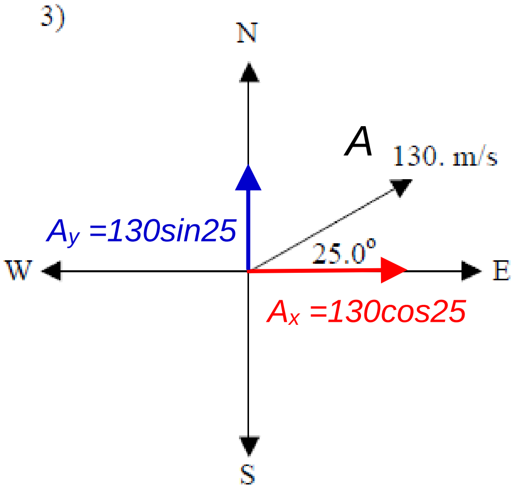
1)



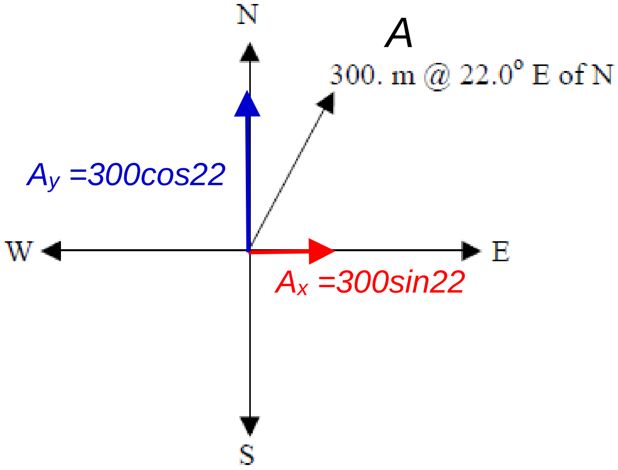
2)



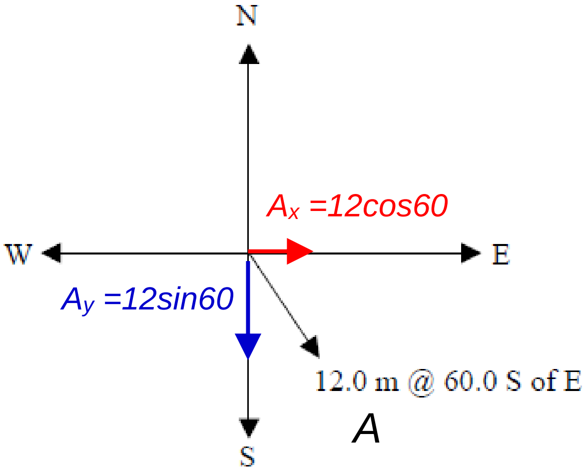
3)



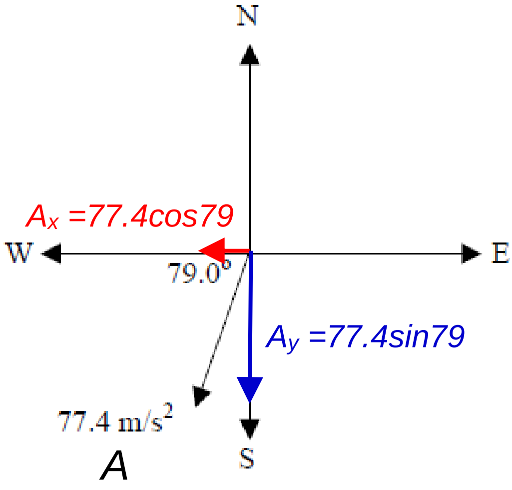
4)



5)



6)



Vector Practice: Answers

Resultants:

1) 7.21 m @ 33.7° N of E or 56.3° E of N
2) 1 m @ S
3) 64.0 m/s @ 38.7° N of W or 51.3° W of N
4) 472 cm @ 39.4° S of W or 50.6° W of S
5) 26.9 m/s @ 31.3° N of E or 58.7° E of N
6) 13.4 m @ 26.6° S of E or 63.4° E of S

Components:

1) $r_N = 21.2$ m $r_E = 21.2$ m
2) $r_N = 19.5$ m $r_W = 46.0$ m
3) $v_N = 54.9$ m/s $v_E = 118$ m/s
4) $r_N = 278$ m $r_E = 112$ m
5) $r_S = 10.4$ $r_E = 6$
6) $a_W = 14.8$ m/s^2 $a_S = 76.0$ m/s^2