

Steps for solving vector problems using

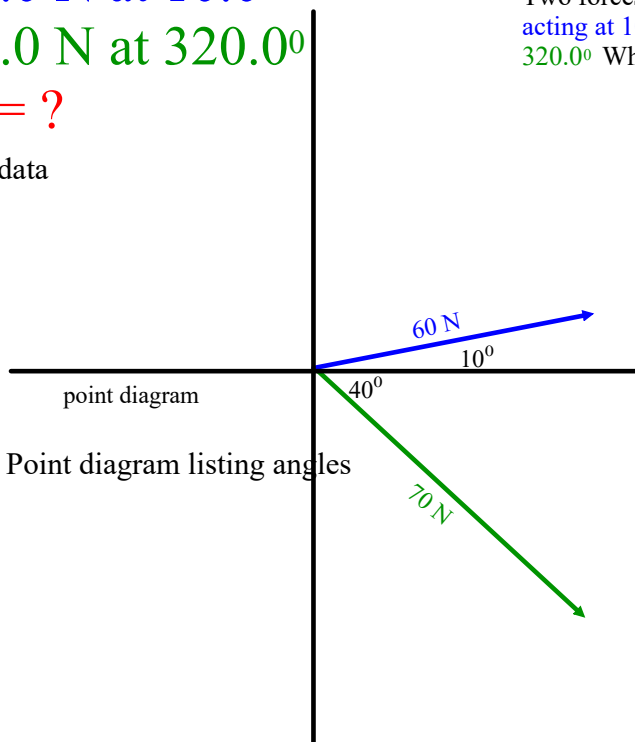
- 1) List data **"Graphical Analysis"**
- 2) draw Point diagram listing angles
freehand
- 3) draw "x" and "y" axis at head of c_1 (from point diagram)
- 4) draw in all angles...use alternate interior/exterior and complimentary/supplementary angles
- 5) move tail of c_2 to head of c_1 at angle c_2 is from axis
- 6) calculate angle between c_1 and c_2 (happy angle) 😊
- 7) draw vector diagram to scale

$$F_1 = 60.0 \text{ N at } 10.0^\circ$$

$$F_2 = 70.0 \text{ N at } 320.0^\circ$$

$$R = ?$$

- 1) List data



- 2) draw Point diagram listing angles

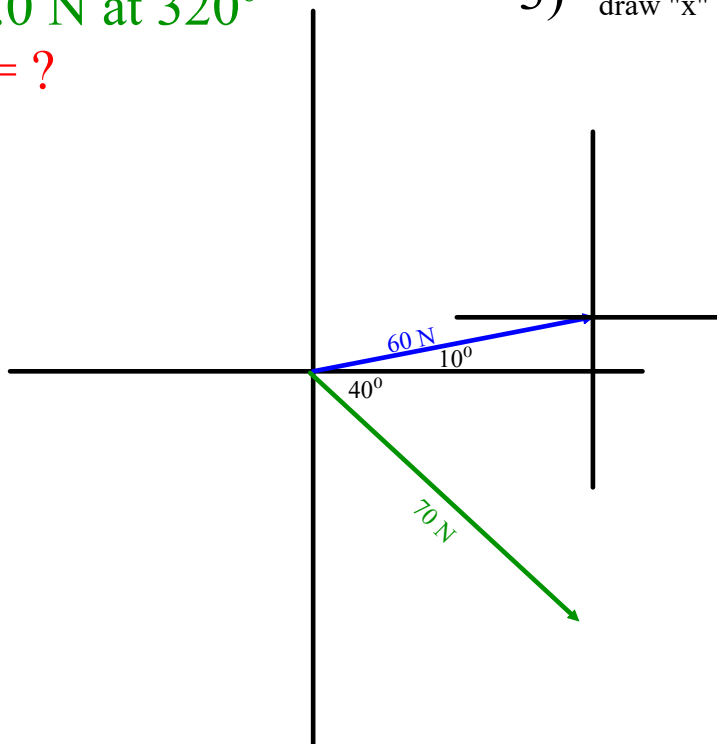
Two forces act on an object. One force is 60.0 N acting at 10.0° , and the second is 70.0 N acting at 320.0° . What is the *resulting force*?

60.0 N at 10.0°

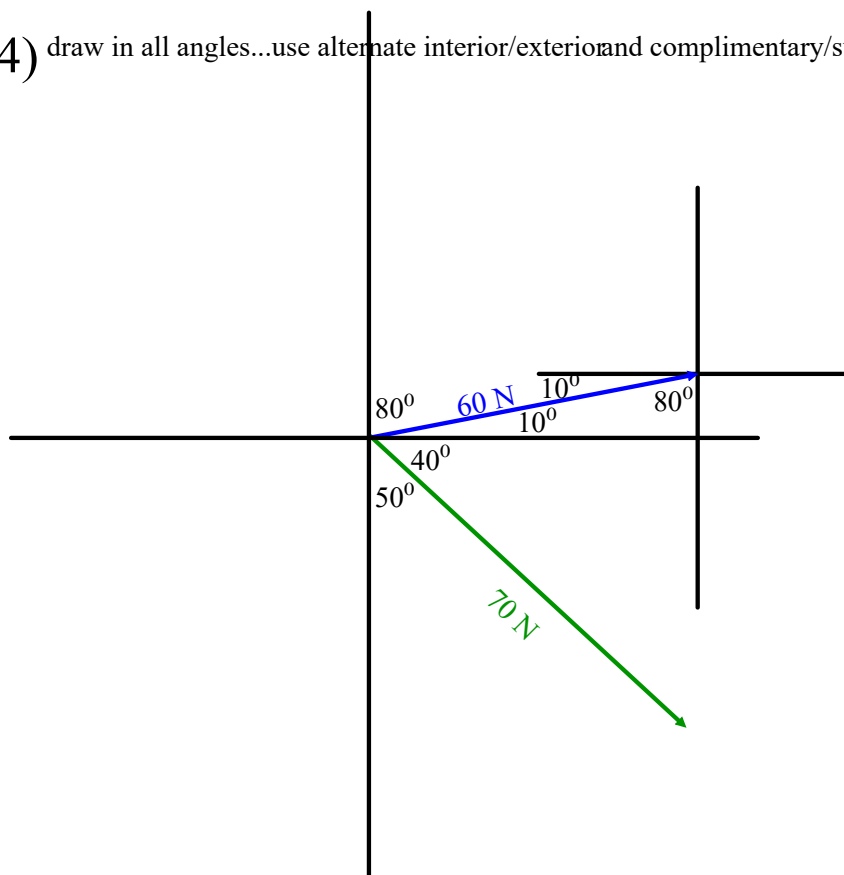
70.0 N at 320°

$R = ?$

3) draw "x" and "y" axis at head of c_1



4) draw in all angles...use alternate interior/exterior and complimentary/supplementary angles

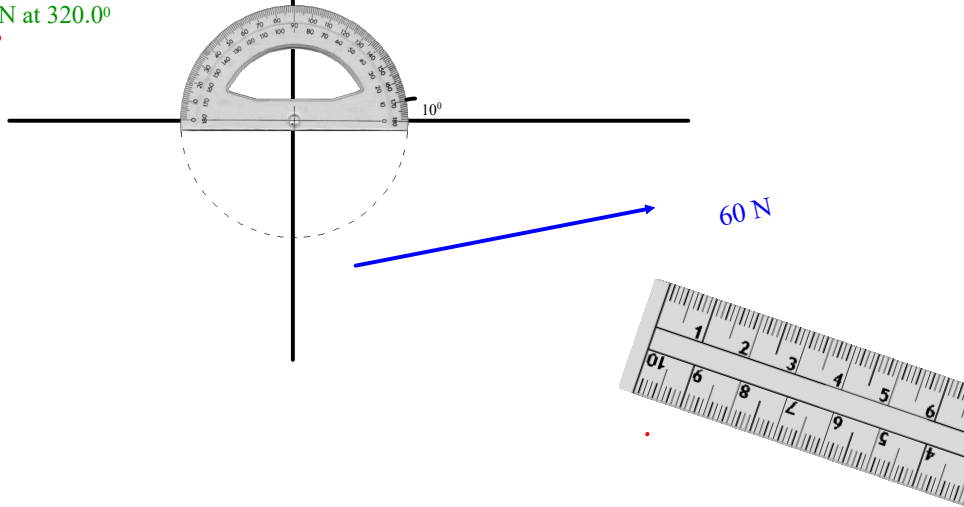


7) draw vector diagram to scale

scale: 1cm = 10 N

a) measure angle of C_1

60.0 N at 10.0°
 70.0 N at 320.0°
 R = ?



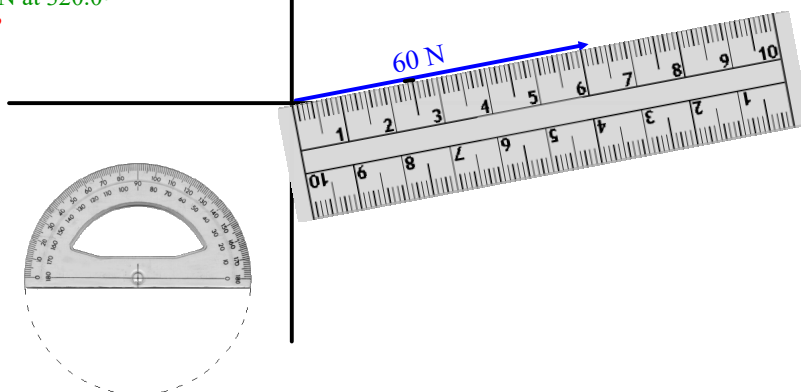
Remember, all directions are listed from 0° to the tail of the vector (in this case the resultant)

7) draw vector diagram to scale

scale: 1cm = 10 N

a) measure angle of C_1
 b) draw C_1 to scale

60.0 N at 10.0°
 70.0 N at 320.0°
 R = ?



Remember, all directions are listed from 0° to the tail of the vector (in this case the resultant)

7) draw vector diagram to scale

60.0 N at 10.0°
70.0 N at 320.0°
R = ?

scale: 1cm = 10 N

a) measure angle of C₁
b) draw C₁ to scale
c) measure happy angle

Remember, all directions are listed from 0° to the tail of the vector (in this case the resultant)

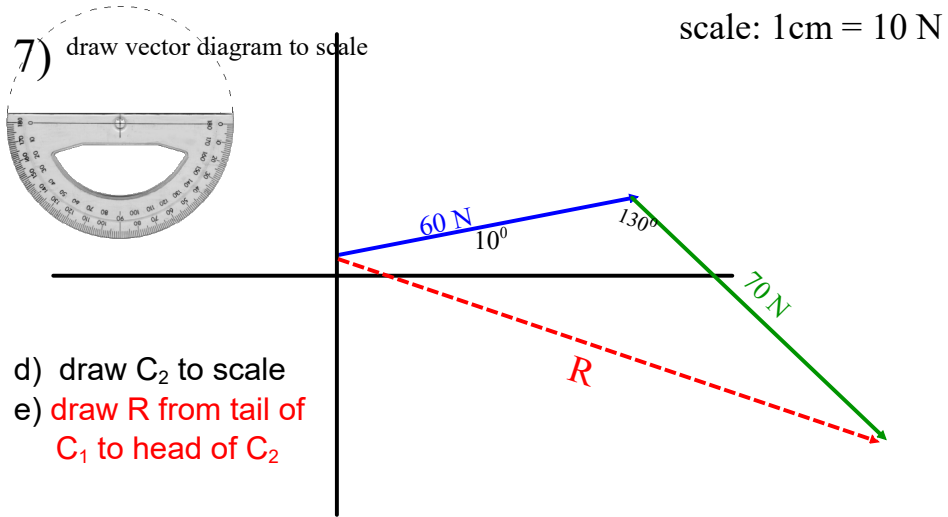
7) draw vector diagram to scale

scale: 1cm = 10 N

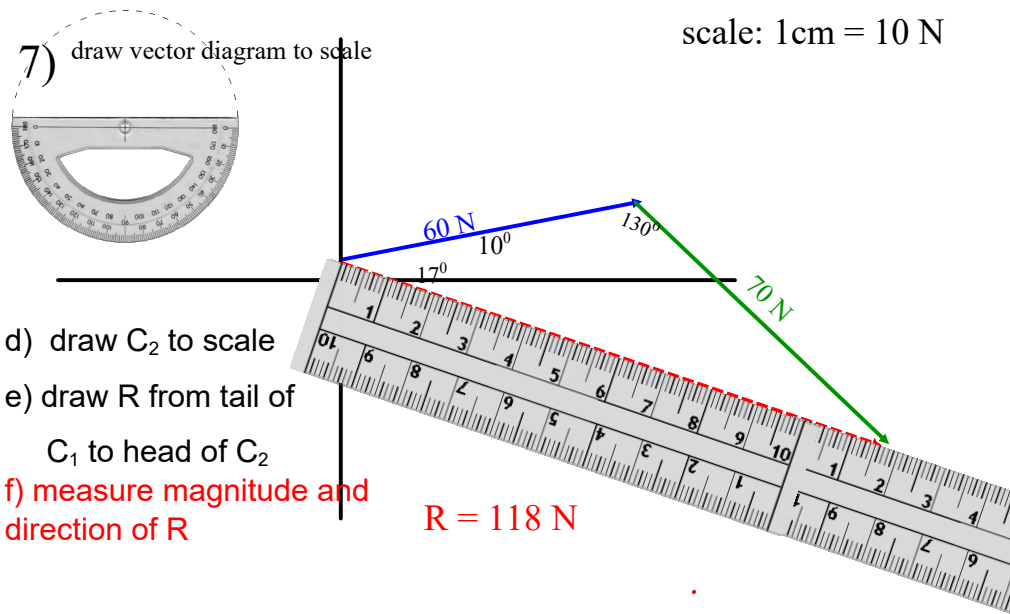
a) measure angle of
b) draw C₁ to scale
c) measure happy angle

d) draw C₂ to scale

Remember, all directions are listed from 0° to the tail of the vector (in this case the resultant)



Remember, all directions are listed from 0° to the tail of the vector (in this case the resultant)

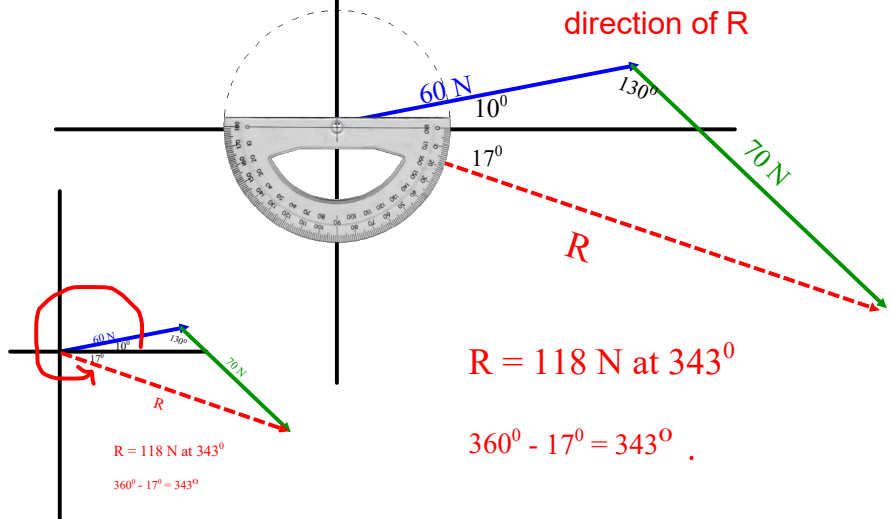


Remember, all directions are listed from 0° to the tail of the vector (in this case the resultant)

7) draw vector diagram to scale

scale: 1cm = 10 N

f) measure magnitude and direction of R



$R = 118 \text{ N at } 343^\circ$

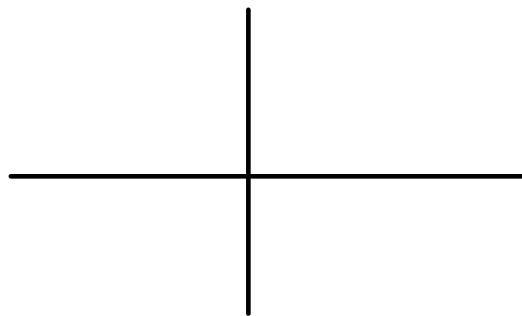
$360^\circ - 17^\circ = 343^\circ$

Remember, all directions are listed from 0° to the tail of the vector (in this case the resultant)

"Graphical Analysis" problem

1) Data

Two forces act on an object. One force is 85 N at 112° and the other is 77 N at 12° . What is the resultant?



"Graphical Analysis" problem

Two forces act on an object.
 One force is 85 N at 112° and
 the other is 77 N at 12°. What
 is the resultant?

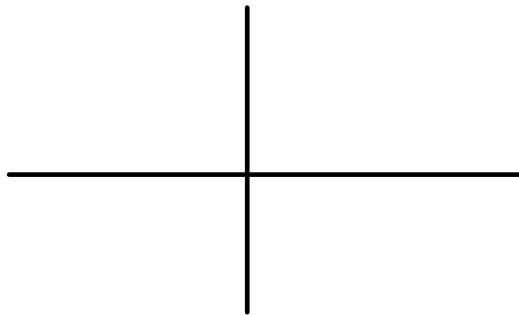
1) Data

$F_1 = 85 \text{ N at } 112^\circ$

$F_2 = 77 \text{ N at } 12^\circ$

$R = ?$

2) Draw a point diagram



1) Data

Example:

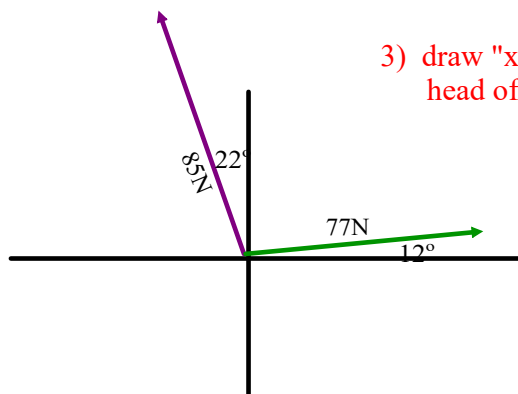
$F_1 = 85 \text{ N at } 112^\circ$

$F_2 = 77 \text{ N at } 12^\circ$

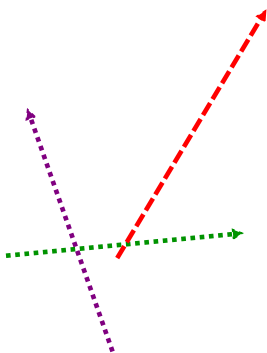
$R = ?$

"Graphical Analysis" problem

2) Draw a point diagram



3) draw "x" and "y" axis at head of c_1



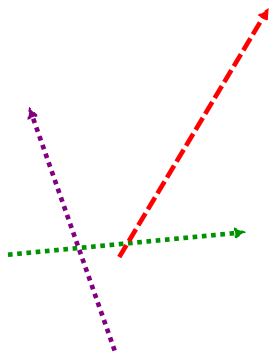
1) Data

Example:

$F_1 = 85 \text{ N at } 112^\circ$

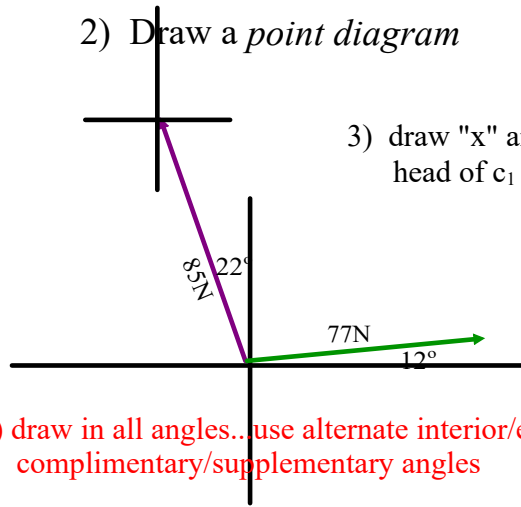
$F_2 = 77 \text{ N at } 12^\circ$

$R = ?$



"Graphical Analysis" problem

2) Draw a *point diagram*



3) draw "x" and "y" axis at head of c_1

4) draw in all angles...use alternate interior/exterior and complimentary/supplementary angles

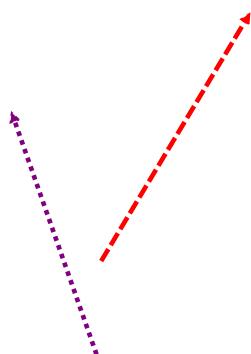
1) Data

Example:

$F_1 = 85 \text{ N at } 112^\circ$

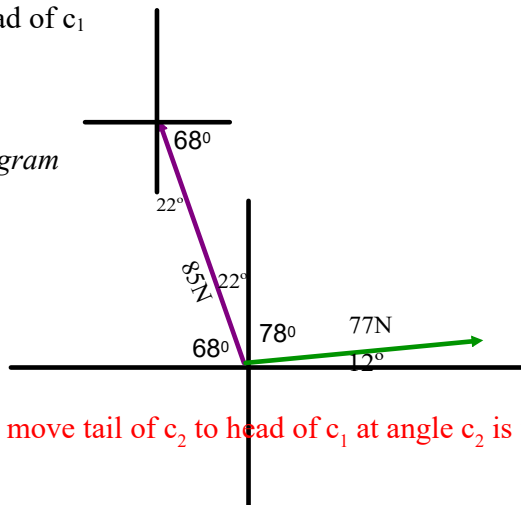
$F_2 = 77 \text{ N at } 12^\circ$

$R = ?$



"Graphical Analysis" problem

3) draw "x" and "y" axis at head of c_1



4) draw in all angles...use alternate interior/exterior and complimentary and supplementary angles

2) Draw a *point diagram*

5) move tail of c_2 to head of c_1 at angle c_2 is from axis

1) Data

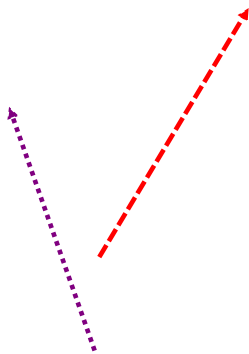
Example:

$F_1 = 85 \text{ N at } 112^\circ$

$F_2 = 77 \text{ N at } 12^\circ$

$R = ?$

2) Draw a *point diagram*

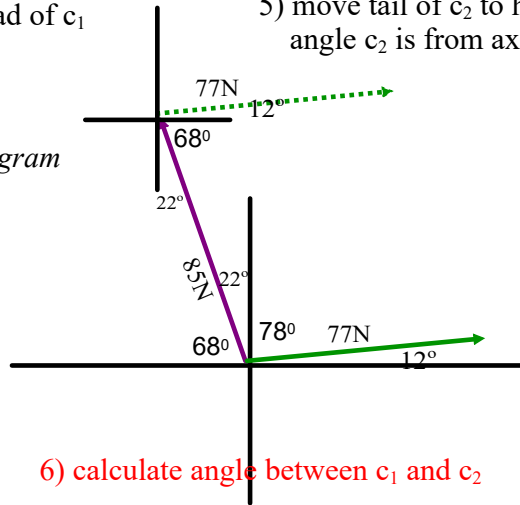


"Graphical Analysis" problem

3) draw "x" and "y" axis at head of c_1

4) draw in all angles...use alternate interior/exterior and complimentary and supplementary angles

5) move tail of c_2 to head of c_1 at angle c_2 is from axis



6) calculate angle between c_1 and c_2

1) Data

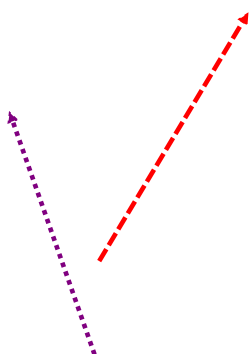
Example:

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$R = ?$

2) Draw a *point diagram*

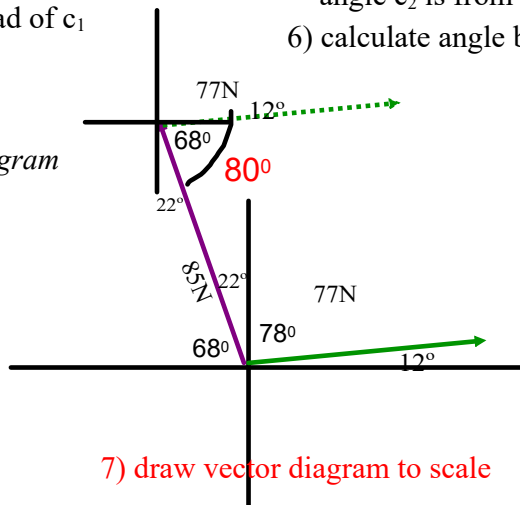


"Graphical Analysis" problem

4) draw in all angles...use alternate interior/exterior and complimentary and supplementary angles

5) move tail of c_2 to head of c_1 at angle c_2 is from axis

6) calculate angle between c_1 and c_2



7) draw vector diagram to scale

1) Data

"Graphical Analysis" problem

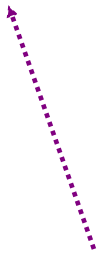
Example:

$F_1 = 85 \text{ N at } 112^\circ$

$F_2 = 77 \text{ N at } 12^\circ$

$R = ?$

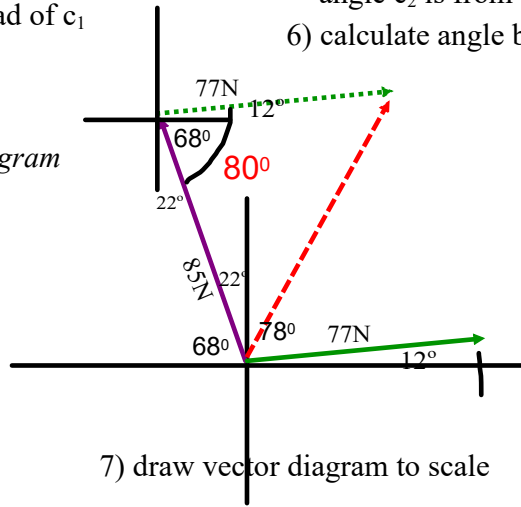
2) Draw a *point diagram*



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5) move tail of c_2 to head of c_1 at angle c_2 is from axis

6) calculate angle between c_1 and c_2

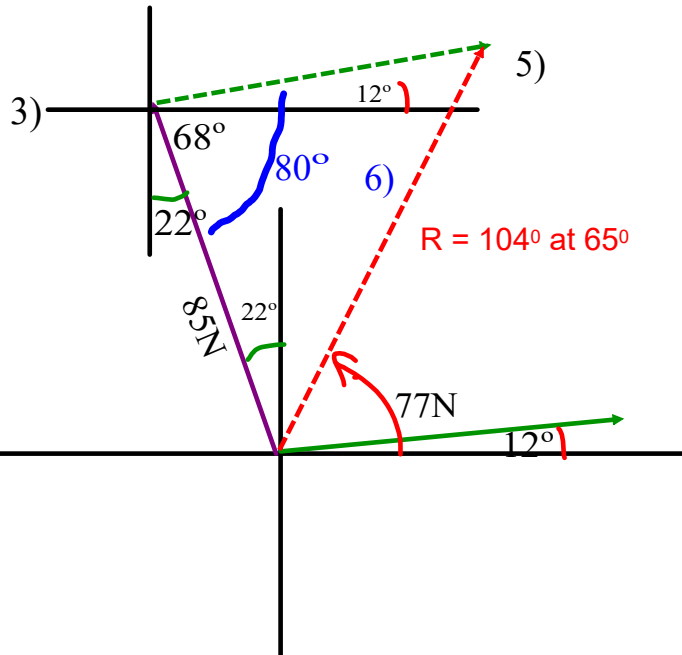
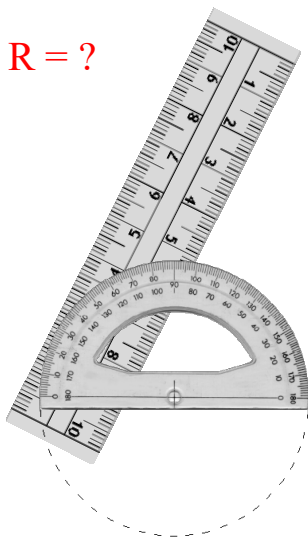


7) draw vector diagram to scale

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$F_2 = 77 \text{ N at } 12^\circ$

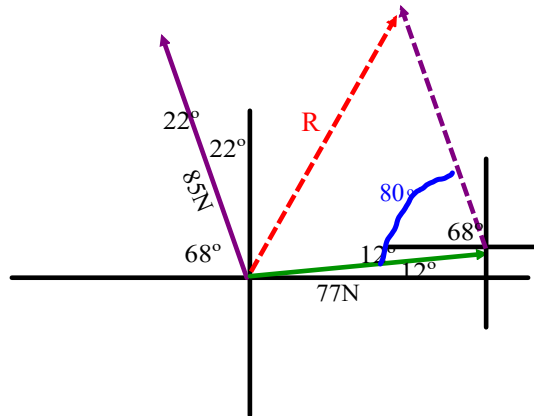
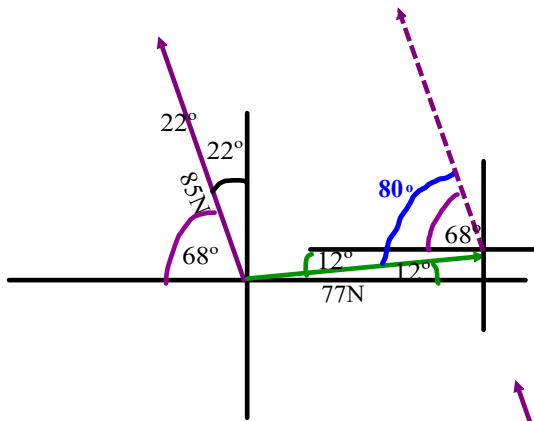
$R = ?$



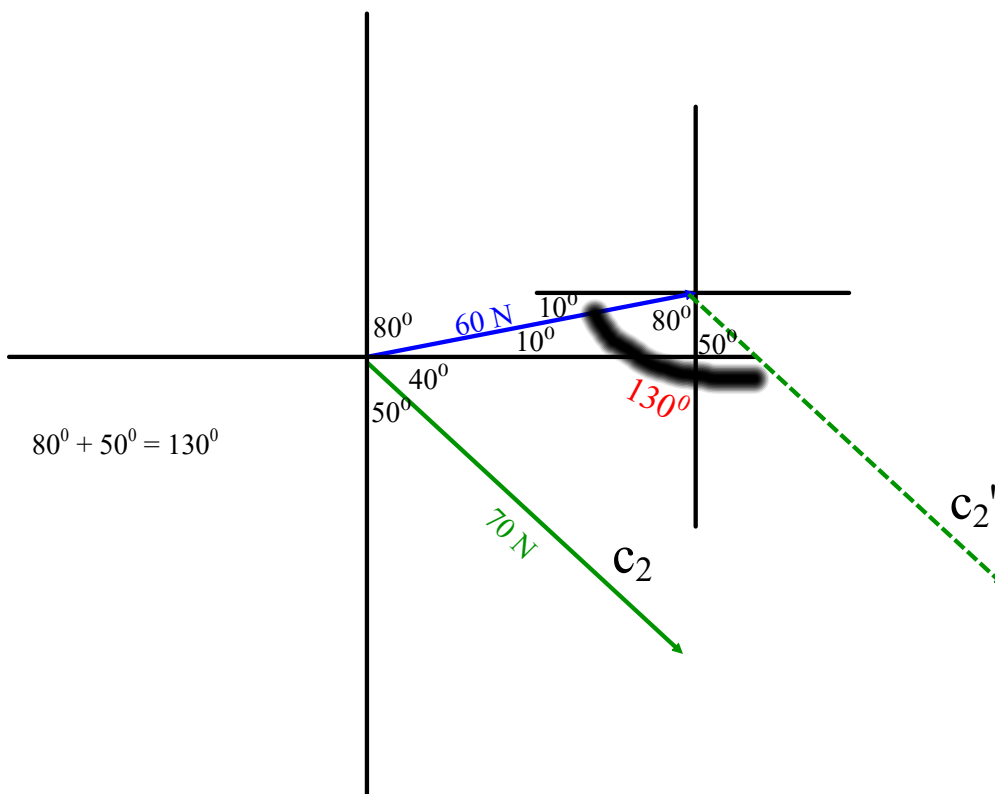
$F_1 = 85 \text{ N at } 112^\circ$

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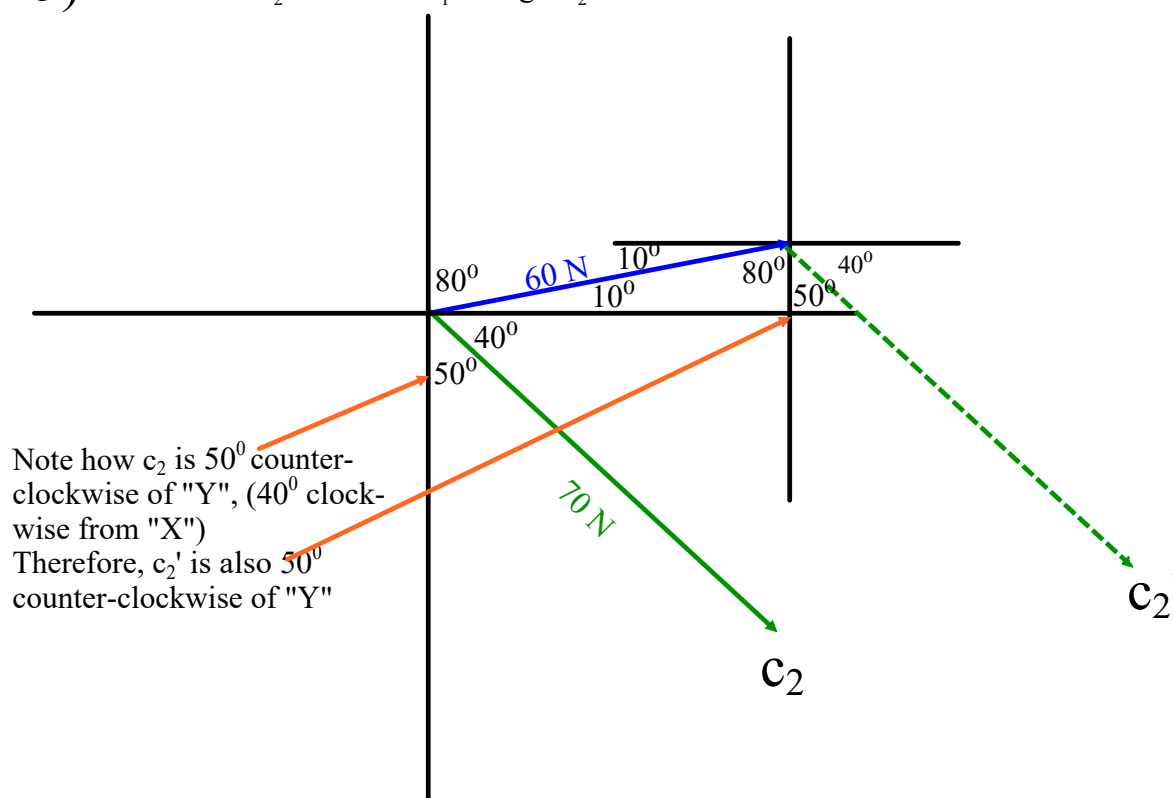
$R = ?$
7)



6) calculate angle between c_1 and c_2



5) move tail of c_2 to head of c_1 at angle c_2 is from axis



Note how c_2 is 50° counter-clockwise of "Y", (40° clockwise from "X")
 Therefore, c_2' is also 50° counter-clockwise of "Y"