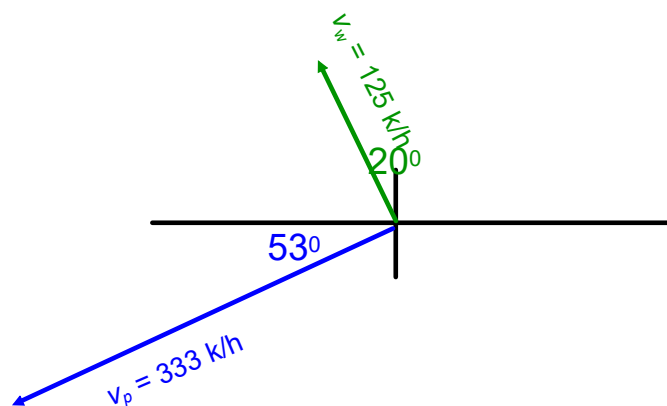
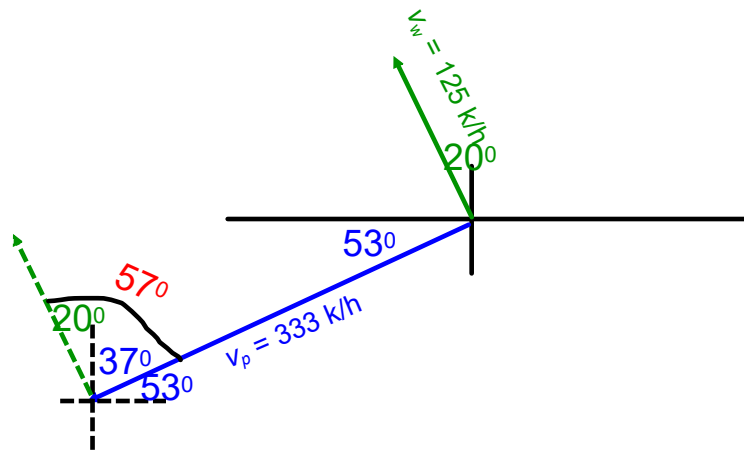


A plane heads 233° at 333 km/hr and encounters a wind blowing at 110° at 125 km/hr. What is the resulting velocity of the plane?

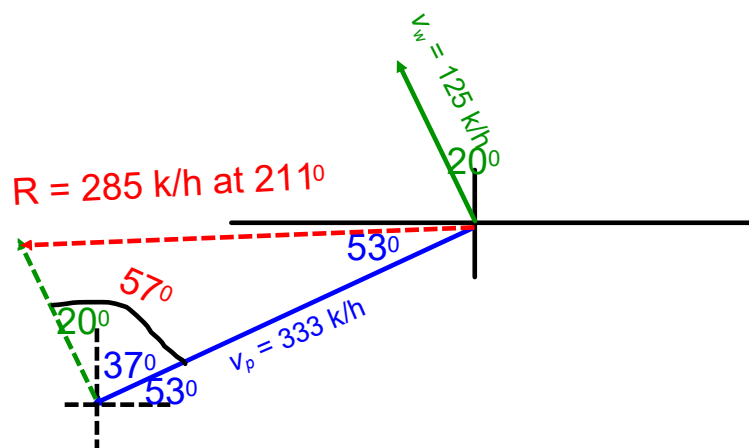
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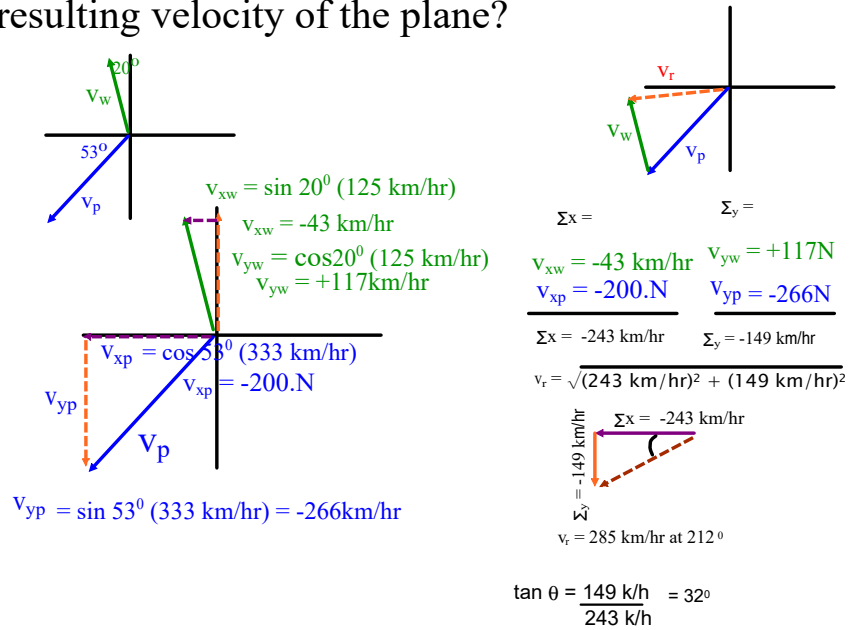
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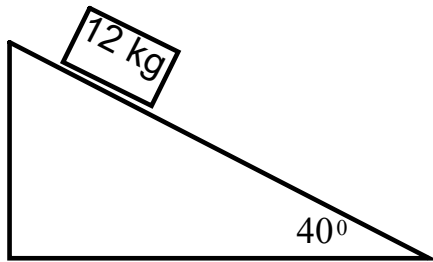
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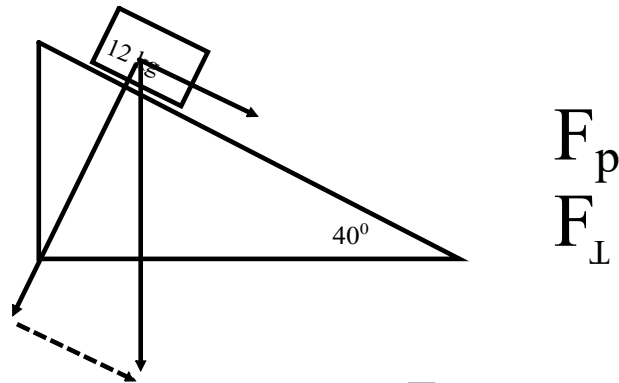


Find F_p and F_L



F_p
 F_L

Find F_p and F_L



$$F_p = \sin 40^\circ (-118 \text{ N})$$

$$F_p = -76. \text{ N}$$

$$F_w = mg$$

$$F_w = 12 \text{ kg} (-9.8 \text{ m/s}^2)$$

$$F_w = -118 \text{ N}$$

$$F = \cos 40^\circ (-118 \text{ N})$$

$$F = -90. \text{ N}$$

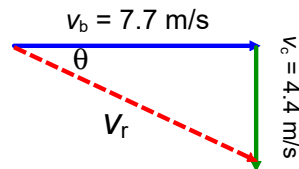
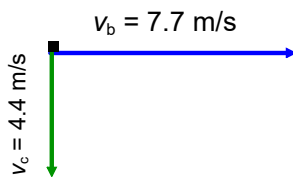
A boat can travel 7.7 m/s in water. Where does the boat end up if it heads directly across stream and encounters a current of 4.4 m/s?

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$$v_b = 7.7 \text{ m/s}$$

$$v_c = 4.4 \text{ m/s}$$

V_r



$$v_r = \sqrt{(7.7 \text{ m/s})^2 + (4.4 \text{ m/s})^2}$$

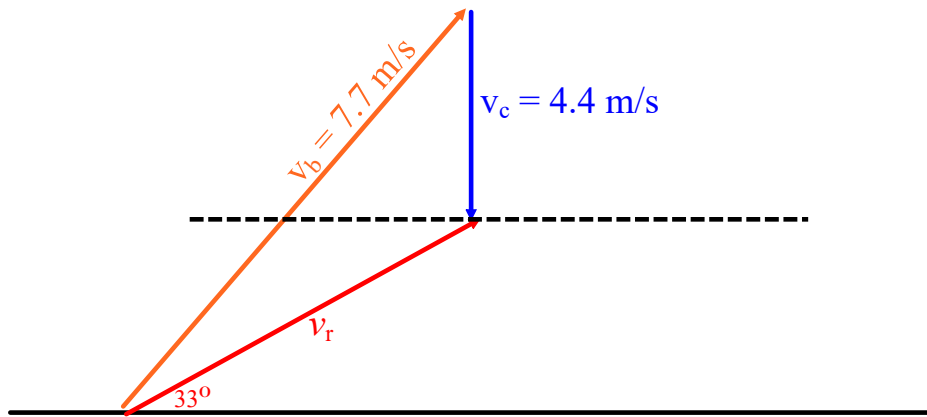
$$v_r = 8.9 \text{ m/s}$$

$$\tan\theta = 4.4 \text{ m/s} / 7.7 \text{ m/s}$$

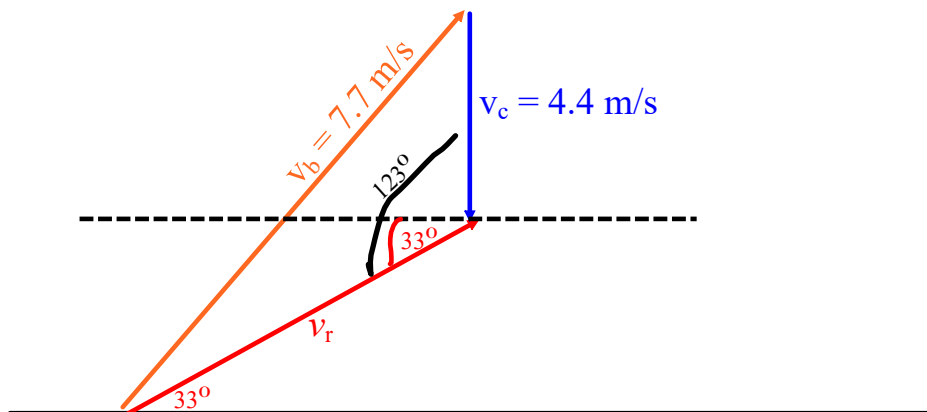
$$\theta = 30.0^\circ \text{ d.s.}$$

A boat can travel 7.7 m/s in water. Where should the boat head if it wants to end up 33° up stream and it encounters a current of 4.4 m/s?.....solve graphically.....

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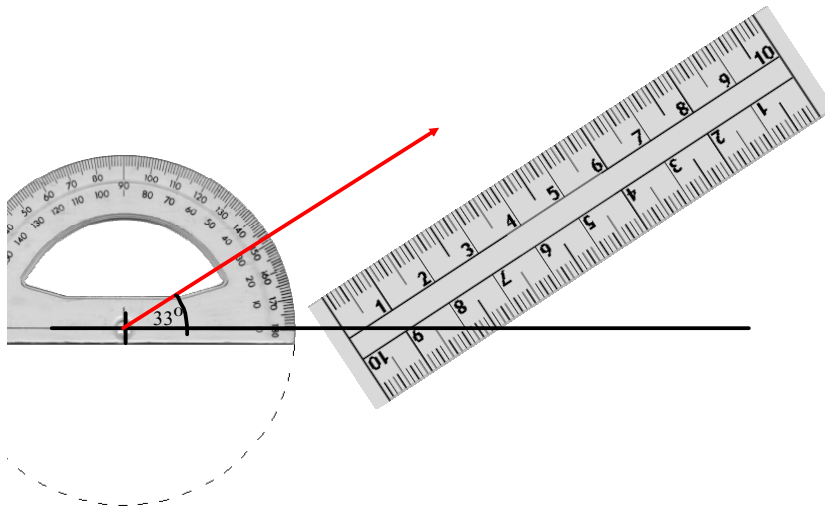


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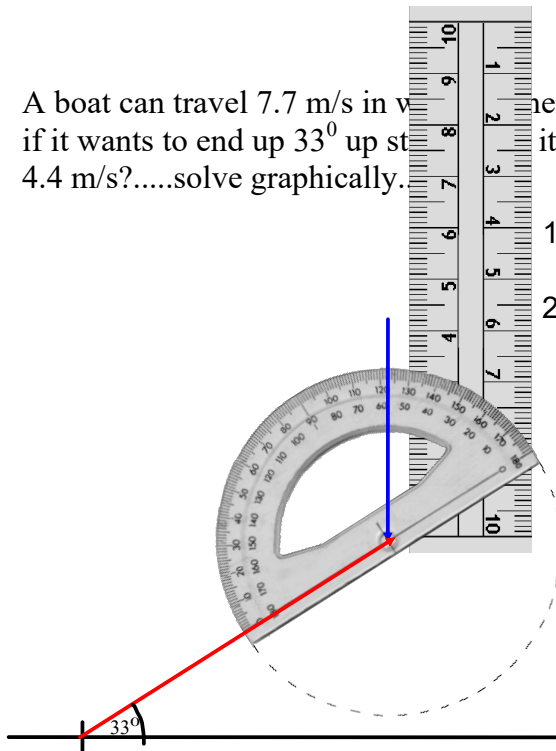
A boat can travel 7.7 m/s in water. Where should the boat head if it wants to end up 33° up stream and it encounters a current of 4.4 m/s?.....solve graphically.....

- 1) measure v_r at 33° longer it needs to be

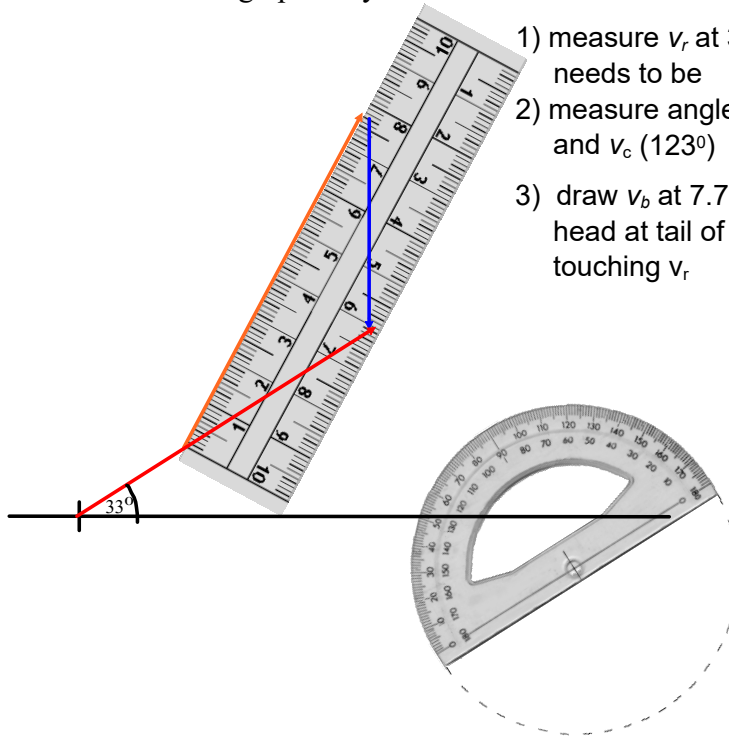


A boat can travel 7.7 m/s in water. Where should the boat head if it wants to end up 33° up stream and it encounters a current of 4.4 m/s?.....solve graphically.

- 1) measure v_r at 33° longer it needs to be
- 2) measure angle between v_r and v_c (123°) and draw v_c 4.4 m/s long

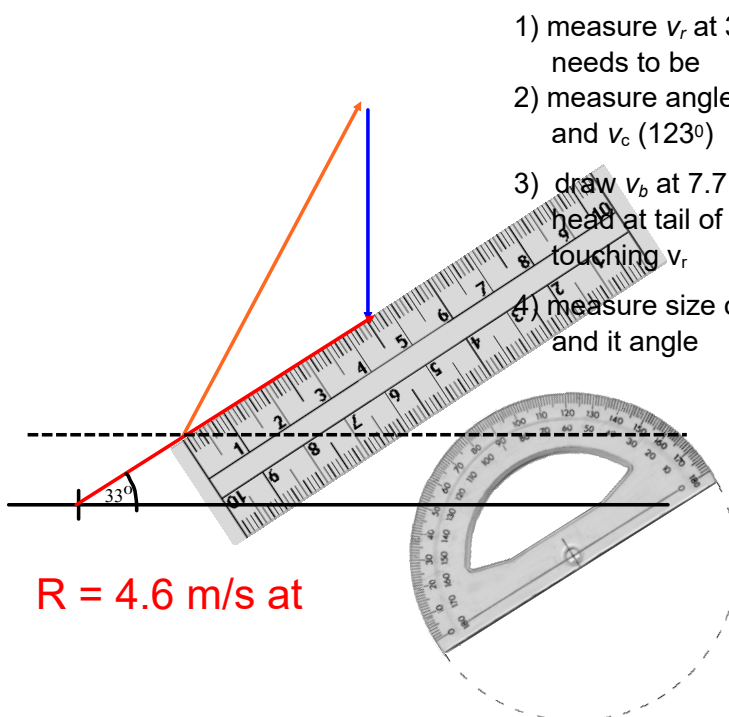


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- 1) measure v_r at 33° longer it needs to be
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- 3) draw v_b at 7.7 m/s long (It's head at tail of v_c and it's tail touching v_r)

A boat can travel 7.7 m/s in water. Where should the boat head if it wants to end up 33° up stream and it encounters a current of 4.4 m/s?.....solve graphically.....

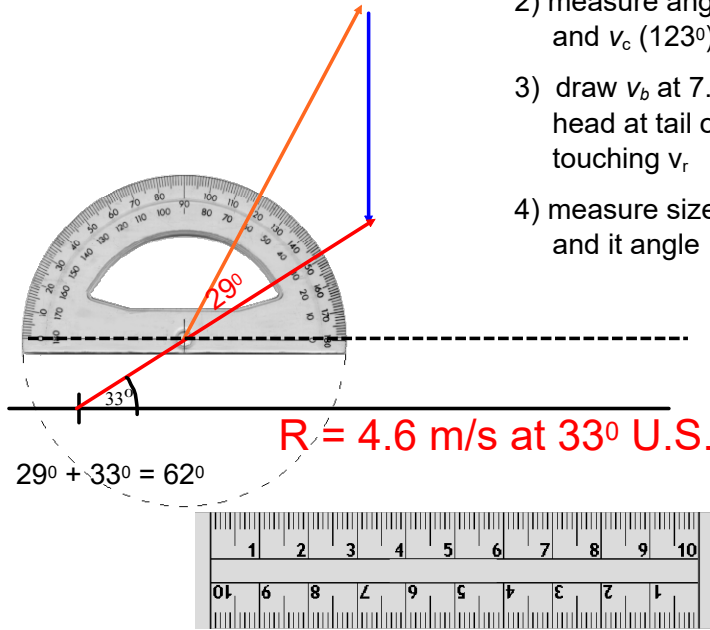


- 1) measure v_r at 33° longer it needs to be
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- 4) measure size of resultant and it angle

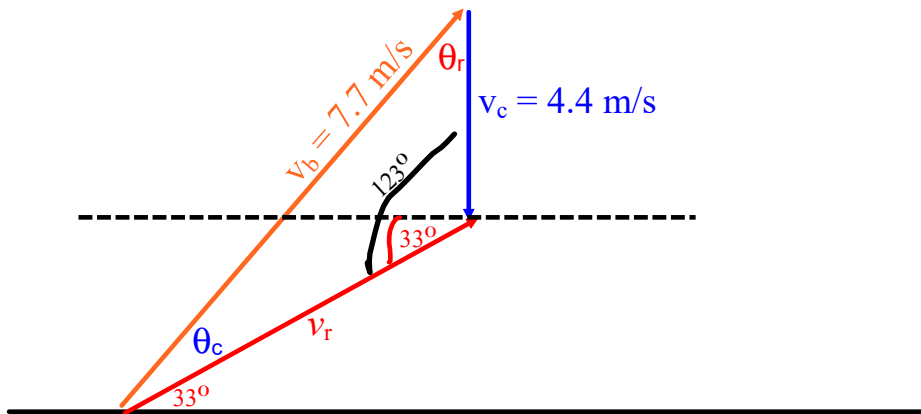
R = 4.6 m/s at

A boat can travel 7.7 m/s in water. Where should the boat head if it wants to end up 33° up stream and it encounters a current of 4.4 m/s?.....solve graphically.....

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$$\frac{\sin 123^\circ}{7.7 \text{ m/s}} = \frac{\sin \theta_c}{4.4 \text{ m/s}} = \frac{\sin \theta_r}{v_r}$$

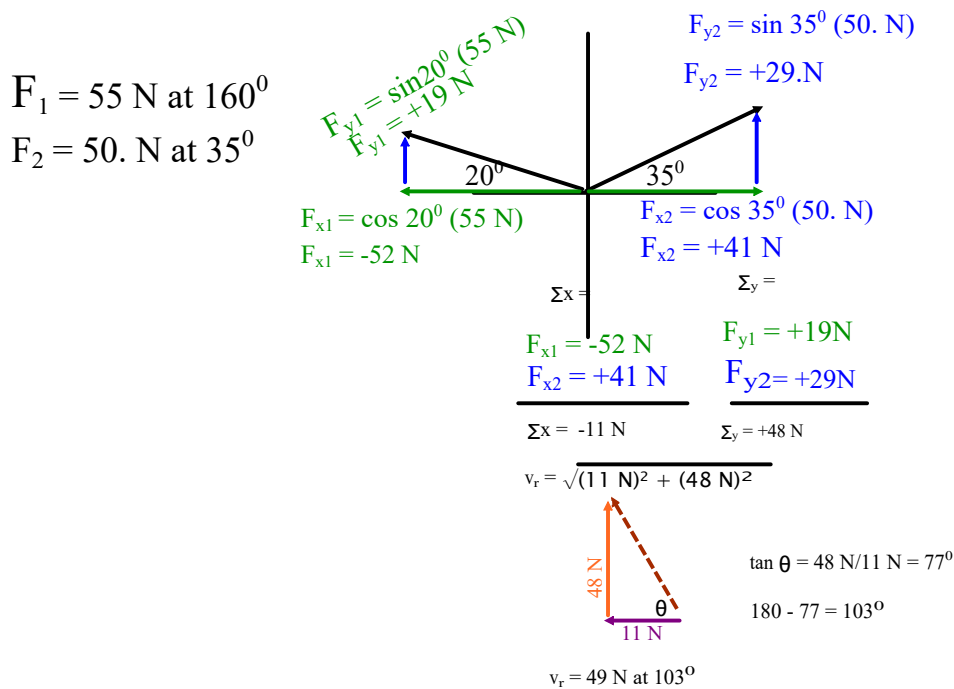
$\theta_r = 28^\circ$
 $180 - 123^\circ - 29^\circ = 28^\circ$

$R = 4.3 \text{ m/s at } 33^\circ$

$\theta_c = 29^\circ$ $v_r = 4.3 \text{ m/s}$

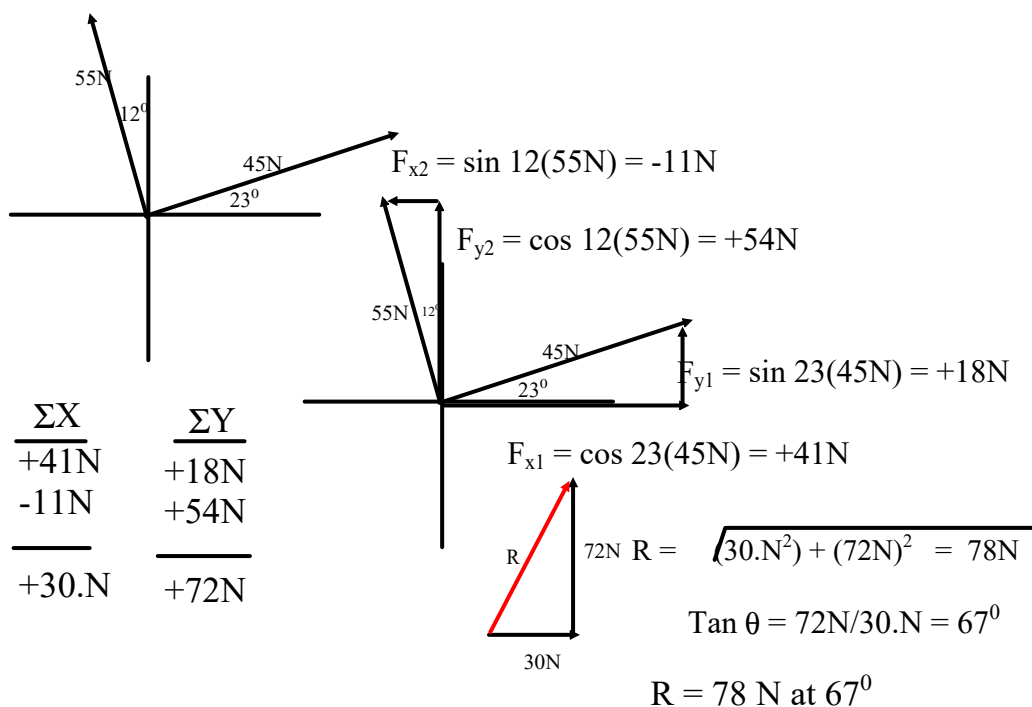
Two forces act on an object. What is the resultant if one force is 55 N at 160° and the second force is 50. N at 35°

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What is the resultant of 45 N at 23° and 55 N at 102° . Use the sum of the "X"s and "Y"s to solve.

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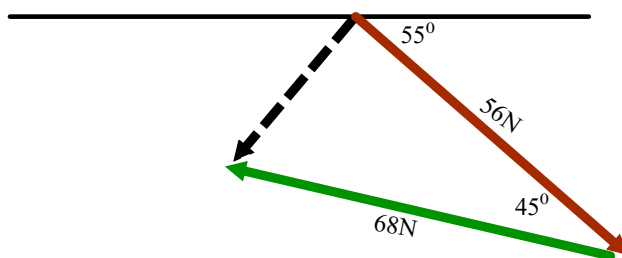
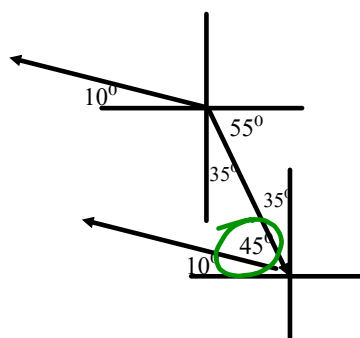
graphically

$$F_1 = 56\text{N at } 305^\circ$$

$$F_2 = 68\text{N at } 170^\circ$$

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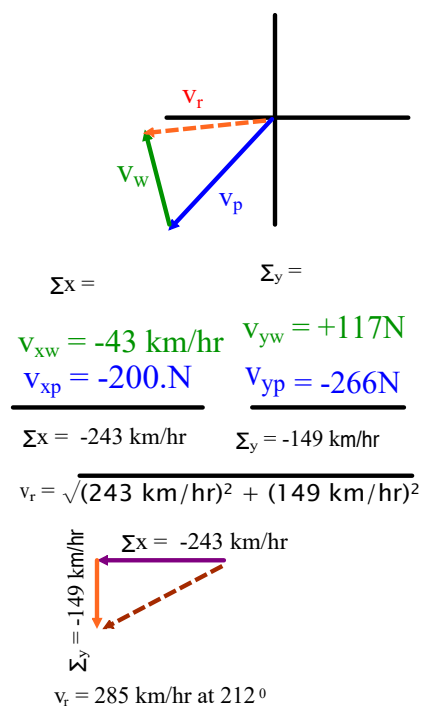
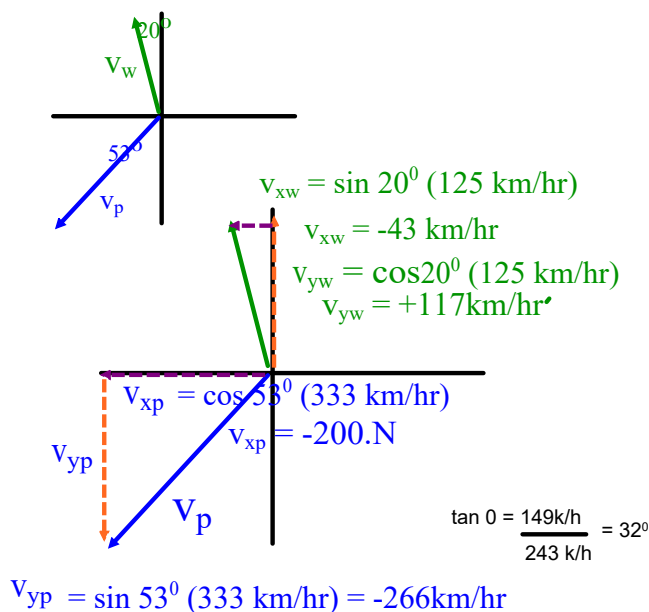
$$F_2 = 68\text{N at } 170^\circ$$



$$R = 48\text{ N at } 224^\circ$$

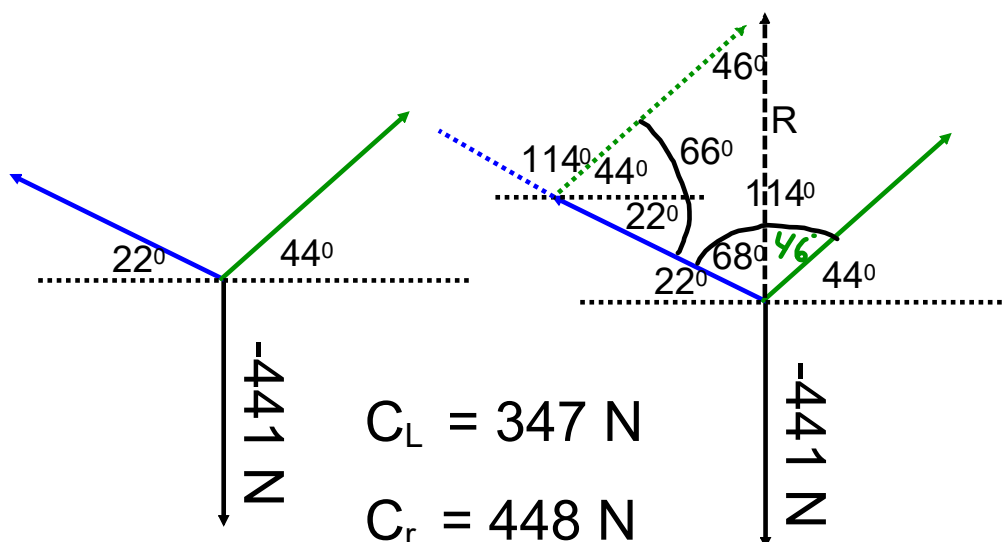
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A 45 kg sign is suspended by two cables. One at 22° from the left horizontal the other at 44° from the right horizontal. What is the force on the two cables?

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A ball is kicked at 35 m/s at an angle of 25° with the horizontal. What are the horizontal and vertical components of the velocity?

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$$v_b = 35 \text{ m/s at } 25^\circ \text{ ground}$$

$$v_x = ?$$

$$v_y = ?$$

