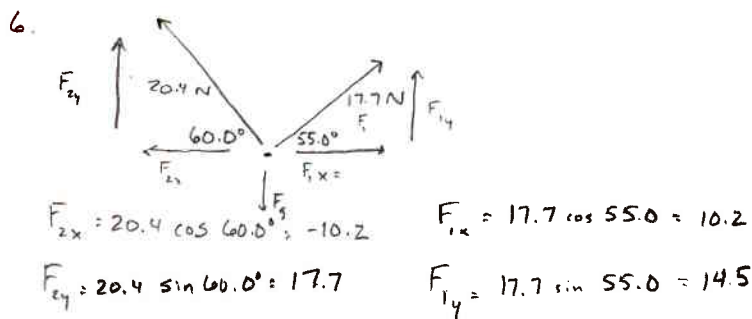
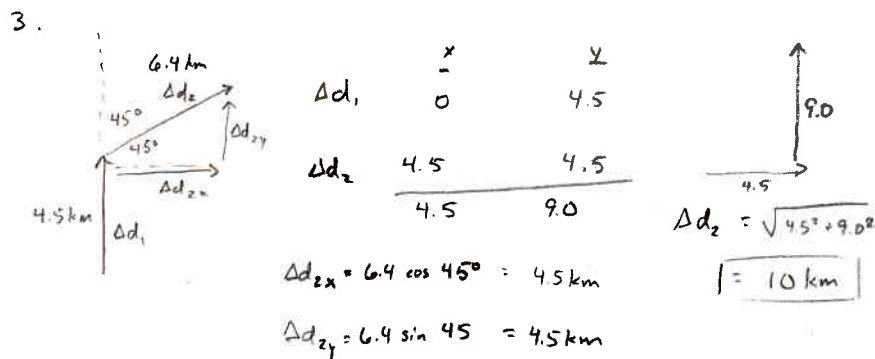
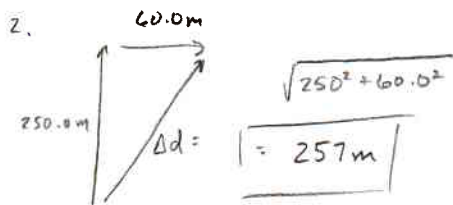


p. 121



$\Sigma F_x = F_{1x} + F_{2x}$

$= 10.2 + (-10.2) = 0$

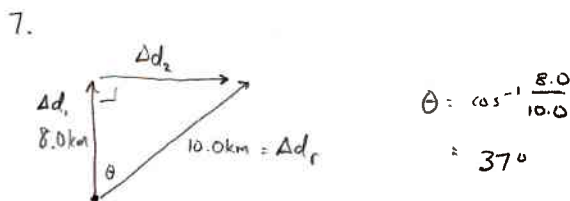
at equilibrium in x-direction

$\Sigma F_y = F_{1y} + F_{2y} + F_3$

$= 17.7 + 14.5 + (320)(-9.80)$

$= -3117.8 \text{ N}$

accelerating upward



$\sin 37^\circ = \frac{\Delta d_1}{10.0 \text{ km}}$

$\Delta d_1 = 6.0 \text{ km}$

10. X-component:

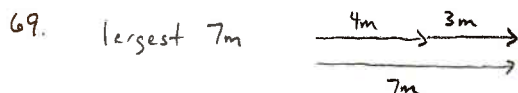
positive for angles less than 90° or greater than 270°

negative when greater than 90° or less than 270°

X-comp:	
-	+
-	+

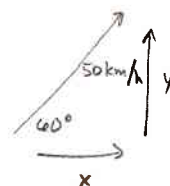
16. on your own

49. moving without changing length or direction



67. Yes, lower the handle to make the angle b/w it and the ground less

72. y-component



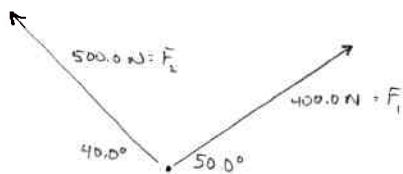
$x = 50 \cos 60^\circ = 25 \text{ km/h}$

$y = 50 \sin 60^\circ = 43 \text{ km/h}$

78. vertical, if angle is greater than 45°



85.



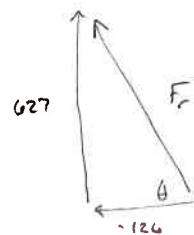
$$F_{1x} = 400.0 \cos 50.0^\circ = 257$$

$$F_{1y} = 400.0 \sin 50.0^\circ = 306$$

$$F_{2x} = 500.0 \cos 40.0^\circ = -383$$

$$F_{2y} = 500.0 \sin 40.0^\circ = 321$$

	x	y
F_1	257	306
$+ F_2$	-383	321
	-126	627



$$F_r = \sqrt{126^2 + 627^2}$$

$$= 640 \text{ N}$$

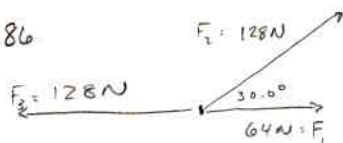
$$\theta = \tan^{-1} \frac{627}{126}$$

$$= 78.6^\circ$$

from
-x axis

640 N @ 78.6° from
negative x-axis

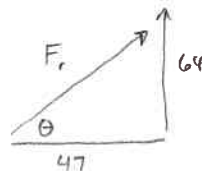
86.



$$F_{2x} = 128 \cos 30.0^\circ = 111 \text{ N}$$

$$F_{2y} = 128 \sin 30.0^\circ = 64 \text{ N}$$

	x	y
F_1	64	0
F_2	111	64
$+ F_3$	-128	0
F_r	47	64



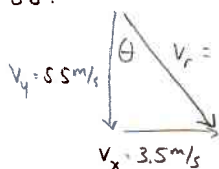
$$F_r = \sqrt{47^2 + 64^2}$$

$$= 79 \text{ N}$$

$$\theta = \tan^{-1} \frac{64}{47} = 54^\circ$$

79 N @ 54°

88.



$$V_r = \sqrt{3.5^2 + 5.5^2}$$

$$= 6.5 \text{ m/s}$$

$$\theta = \tan^{-1} \frac{3.5}{5.5}$$

$$= 32^\circ \text{ from vertical}$$

6.5 m/s @ 32° from vertical