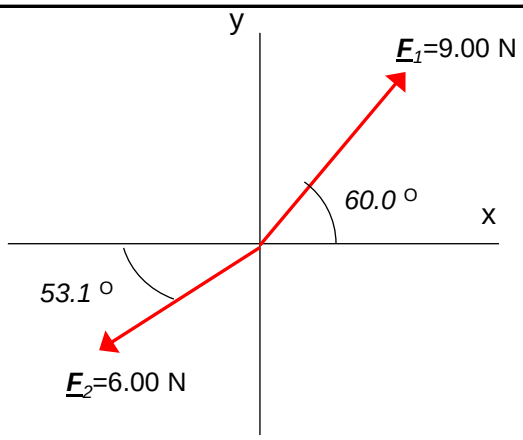
ASSIGNMENT No. 4 ***CHAPTER 4***

Problem 1)

Forces $\underline{\boldsymbol{F}}_1$ and $\underline{\boldsymbol{F}}_2$ act at a point. The magnitude of $\underline{\boldsymbol{F}}_1$ is 9.00N, and its direction is 60.0^{O} above x-axis in second quadrant. The magnitude of $\underline{\boldsymbol{F}}_2$ is 6.00 N, and its direction is 53.1^{O} below the x-axis in the third quadrant.

a) What are the x- and y- components of the resultant force?
b) What is the magnitude of the resultant force and its direction?



Problem 2)

A person pushes horizontally on block B, causing both blocks to move horizontally as a unit. There is friction between block B and the horizontal table. If the two blocks are moving to the right at constant velocity, Expalin your selection.

A. B exerts no horizontal force on A.
B. the horizontal force that B exerts on A points to the left
C. the horizontal force that B exerts on A points to the right
D. answer depends on the strength of the push.
E. answer depends on the strength of the push and the masses of the blocks. Explain for full credit.

Problem 3)

When you apply an upward force of magnitude F to a block of mass 2.00 kg the block accelerates upward at 3.00 m/s^2. Ignore any forces exerted on the block by the air. Calculate:

a) Force F.
b) the net force on the block, and its direction.
c) the gravitational force on the block, and its direction.

Problem 4)

Superman throws straight up a 2401-N boulder at an adversary. What verticall force must he apply to the boulder to give it a vertical acceleration of 12.0 m/s^2. Draw Free-body-diagram of the boulder

Problem 5)

The swing shown consists of a vertical central shaft with a horizontal arm attached at its upper end. The arm supports a load suspended from a cable being fastened to the arm at a point 3.0 m from the central shaft. (see Figure)

a) Find the time of one revolution of the swing if the cable supporting the load makes an angle of 30.0^{O} with the vertical.
b) Does the angle depend on the weight of the load for a given rate of revolution? Explain.