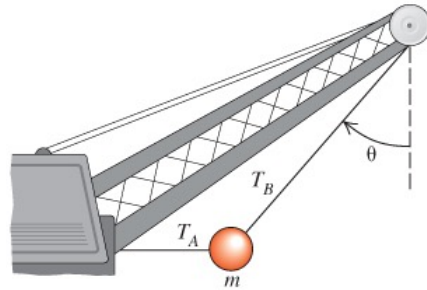
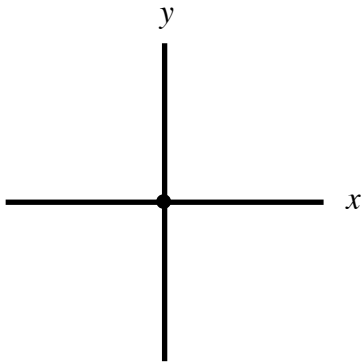


Free-Body Diagrams (FBD) Practice**Example: Crane Boom**

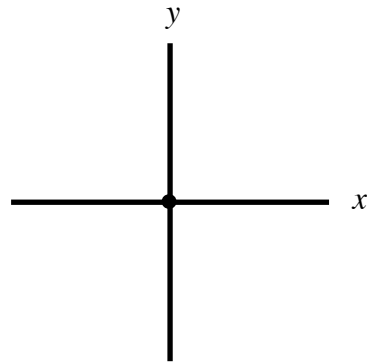
A wrecking ball is supported by a crane boom, as shown in the figure. Draw the FBD for the ball.



(First FBD)



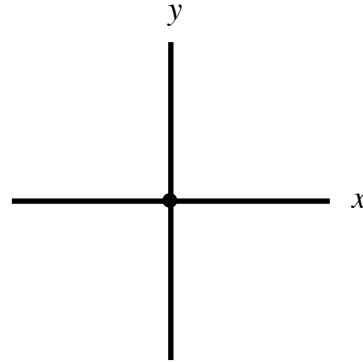
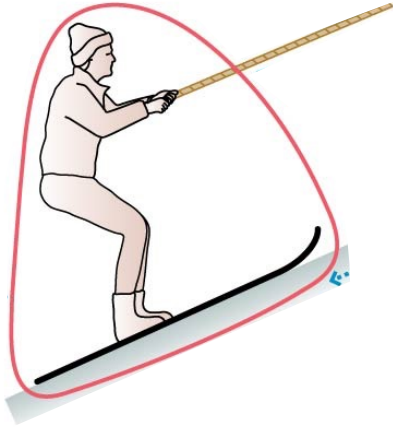
(Second FBD)



Determine the *magnitude* of the vector components in terms of the original vector magnitude and the angle(s).

Example: Skier Pulled Uphill

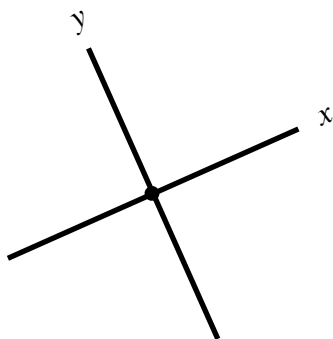
A skier is being towed up a snow-covered hill by a tow-rope. There is friction between the hill and the skis. Draw the free-body diagram for the skier.

**Rotating or Tilting a Coordinate System**

“Tilting” a coordinate system is a useful technique when dealing with **inclined planes** (ramps). One axis is along the surface of the inclined plane, the other is perpendicular to it.

If there are vectors not aligned with the axes in the first tilted FBD, draw a second FBD where the non-aligned vectors are decomposed along the axes.

(Tilted FBD)



(Tilted-Decomposed FBD)

