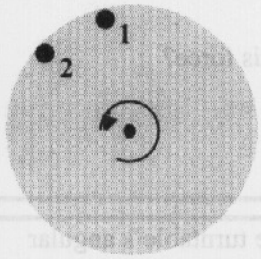
Hand in this sheet **Name**_____

INTERACTIVE LECTURE DEMONSTRATION
PREDICTION SHEET—ROTATIONAL MOTION

Directions: This sheet will be collected. Write your name at the top to record your presence and participation in these demonstrations. Follow your instructor's directions. You may write whatever you wish on the attached Results Sheet and take it with you.

Demonstration 1: A turntable is rotating counter-clockwise at *constant angular speed*. An object near the edge of the turntable remains there without slipping or flying off. The figure to the right shows the object at one instant (position 1) and then an instant later (position 2). On the picture, draw the object's velocity vector $\vec{v}_1$ at position 1 and $\vec{v}_2$ at position 2. Then, in the space to the right, draw the vector that represents the difference of the two velocity vectors, $\Delta\vec{v} = \vec{v}_2 - \vec{v}_1$.

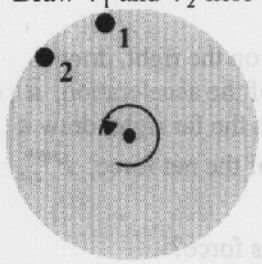
Draw $\vec{v}_1$ and $\vec{v}_2$ here



Draw $\Delta\vec{v}$ here

Demonstration 2: The turntable's rotational speed is *increasing*. An object near the edge of the turntable remains there without slipping or flying off. The figure to the right shows the object at one instant (position 1) and then an instant later (position 2). On the picture, draw the object's velocity vector $\vec{v}_1$ at position 1 and $\vec{v}_2$ at position 2. Then, in the space to the right, draw the vector that represents the difference of the two velocity vectors, $\Delta\vec{v} = \vec{v}_2 - \vec{v}_1$.

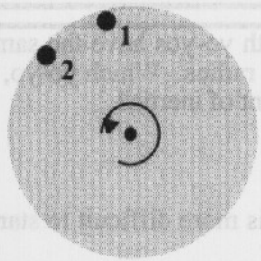
Draw $\vec{v}_1$ and $\vec{v}_2$ here



Draw $\Delta\vec{v}$ here

Demonstration 3: The turntable's rotational speed is *decreasing*. An object near the edge of the turntable remains there without slipping or flying off. The figure to the right depicts the object at one instant (position 1) and then an instant later (position 2). On the picture, draw the object's velocity vector $\vec{v}_1$ at position 1 and $\vec{v}_2$ at position 2. Then, in the space to the right, draw the vector that represents the difference of the two velocity vectors, $\Delta\vec{v} = \vec{v}_2 - \vec{v}_1$.

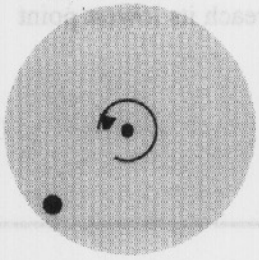
Draw $\vec{v}_1$ and $\vec{v}_2$ here



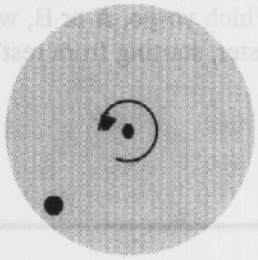
Draw $\Delta\vec{v}$ here

Demonstration 4: The turntable is rotating at *constant speed*. An object near the edge of the turntable remains there without slipping or flying off. In the box immediately on the right, draw a vector in the direction of the acceleration, $\vec{a}$, of the object. In the box on the far right, draw a vector in the direction of the net force, $\vec{F}^{net}$, acting on the object.

Draw $\vec{a}$ here



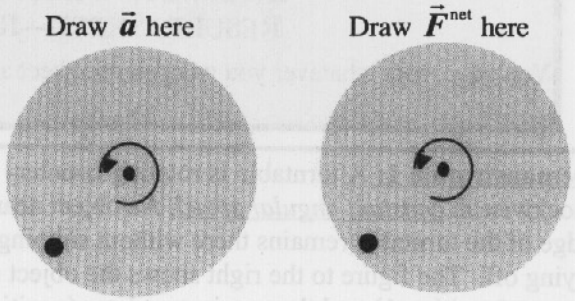
Draw $\vec{F}^{net}$ here



Demonstration 5: The turntable's angular speed is *increasing*. An object near the edge of the turntable remains there without slipping or flying off.

In the box immediately on the right, draw a vector in the direction of the acceleration, $\vec{a}$, of the object. In the box on the far right, draw a vector in the direction of the net force, $\vec{F}^{net}$, acting on the object.

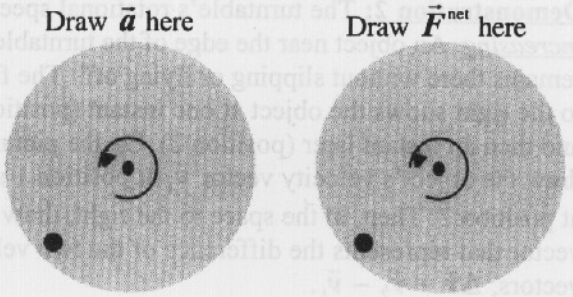
What is the cause of this force?



Demonstration 6: The turntable's angular speed is *decreasing*. An object near the edge of the turntable remains there without slipping or flying off.

In the box immediately on the right, draw a vector in the direction of the acceleration, $\vec{a}$, of the object. In the box on the far right, draw a vector in the direction of the net force, $\vec{F}^{net}$, acting on the object.

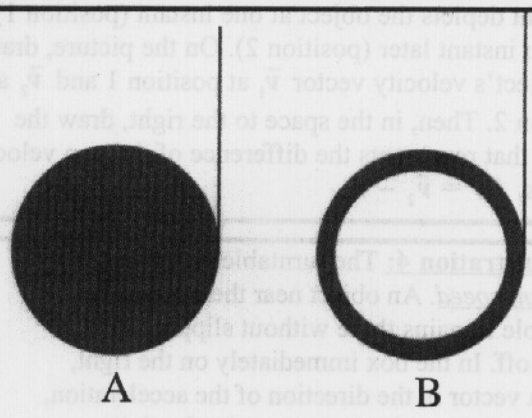
What is the cause of this force?



Demonstration 7: Both yo-yos have the same mass and same outside radius. Which yo-yo, A or B, has the larger moment of inertia?

Which yo-yo, A or B, is more difficult to start rotating?

Which yo-yo, A or B, will reach its lowest point faster, starting from rest?



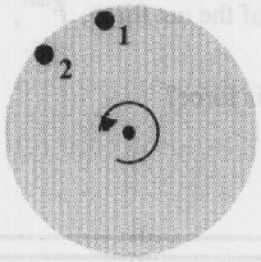
Keep this sheet

INTERACTIVE LECTURE DEMONSTRATION RESULTS SHEET—ROTATIONAL MOTION

You may write whatever you wish on this sheet and take it with you.

Demonstration 1: A turntable is rotating counter-clockwise at *constant angular speed*. An object near the edge of the turntable remains there without slipping or flying off. The figure to the right shows the object at one instant (position 1) and then an instant later (position 2). On the picture, draw the object's velocity vector $\vec{v}_1$ at position 1 and $\vec{v}_2$ at position 2. Then, in the space to the right, draw the vector that represents the difference of the two velocity vectors, $\Delta\vec{v} = \vec{v}_2 - \vec{v}_1$.

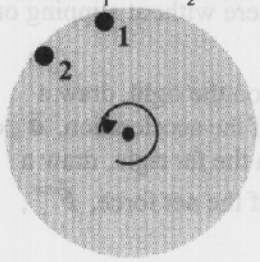
Draw $\vec{v}_1$ and $\vec{v}_2$ here



Draw $\Delta\vec{v}$ here

Demonstration 2: The turntable's rotational speed is *increasing*. An object near the edge of the turntable remains there without slipping or flying off. The figure to the right shows the object at one instant (position 1) and then an instant later (position 2). On the picture, draw the object's velocity vector $\vec{v}_1$ at position 1 and $\vec{v}_2$ at position 2. Then, in the space to the right, draw the vector that represents the difference of the two velocity vectors, $\Delta\vec{v} = \vec{v}_2 - \vec{v}_1$.

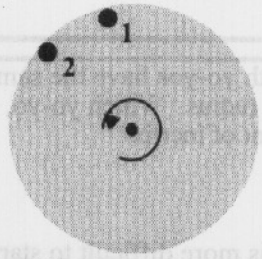
Draw $\vec{v}_1$ and $\vec{v}_2$ here



Draw $\Delta\vec{v}$ here

Demonstration 3: The turntable's rotational speed is *decreasing*. An object near the edge of the turntable remains there without slipping or flying off. The figure to the right depicts the object at one instant (position 1) and then an instant later (position 2). On the picture, draw the object's velocity vector $\vec{v}_1$ at position 1 and $\vec{v}_2$ at position 2. Then, in the space to the right, draw the vector that represents the difference of the two velocity vectors, $\Delta\vec{v} = \vec{v}_2 - \vec{v}_1$.

Draw $\vec{v}_1$ and $\vec{v}_2$ here



Draw $\Delta\vec{v}$ here

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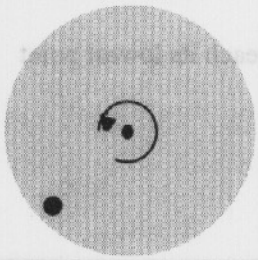
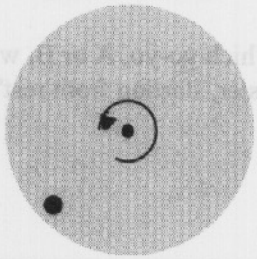
Draw $\vec{a}$ here



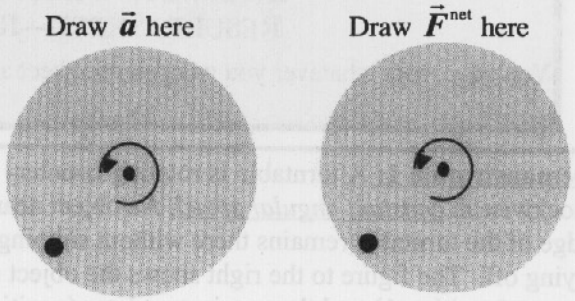
Draw $\vec{F}^{\text{net}}$ here



Demonstration 5: The turntable's angular speed is *increasing*. An object near the edge of the turntable remains there without slipping or flying off.

In the box immediately on the right, draw a vector in the direction of the acceleration, $\vec{a}$, of the object. In the box on the far right, draw a vector in the direction of the net force, $\vec{F}^{net}$, acting on the object.

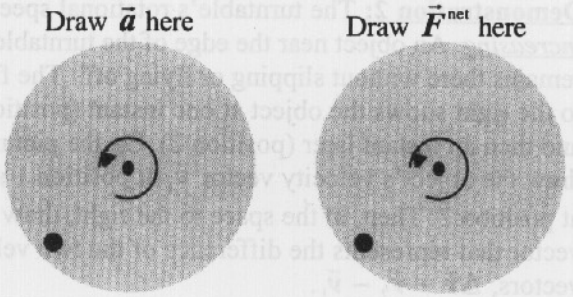
What is the cause of this force?



Demonstration 6: The turntable's angular speed is *decreasing*. An object near the edge of the turntable remains there without slipping or flying off.

In the box immediately on the right, draw a vector in the direction of the acceleration, $\vec{a}$, of the object. In the box on the far right, draw a vector in the direction of the net force, $\vec{F}^{net}$, acting on the object.

What is the cause of this force?



Demonstration 7: Both yo-yos have the same mass and same outside radius. Which yo-yo, A or B, has the larger moment of inertia?

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