

Question:

When the wine glass was directly above my head, was there a force pushing up on the wine glass that kept the glass against the tray?

The experience of acceleration

- Fictitious force - “force” felt as you accelerate
 - Feeling caused by your body’s inertia
 - Points in the direction opposite the acceleration
 - Has a strength proportional to the acceleration

The experience of acceleration

- Fictitious force - “force” felt as you accelerate
- Apparent weight - “weight” felt due to the combined effects of gravitational and fictitious forces

Merry-go-rounds

- Uniform circular motion
 - Constant speed
 - Circular path

Merry-go-rounds

- Uniform circular motion
- Centripetal force
 - Center-seeking
 - The force from whatever is pushing or pulling toward the center of rotation

Merry-go-rounds

- Uniform circular motion
- Centripetal force
- Centripetal acceleration
 - How fast
 - Size of circle

$$a = \frac{v^2}{r}$$

Merry-go-rounds

- Uniform circular motion
- Centripetal force
- Centripetal acceleration
- “Centrifugal force”
 - Fictitious force due to inward centripetal acceleration

Question:

When the wine glass was directly above my head, was there a real force pushing up on the wine glass that kept the glass against the tray?