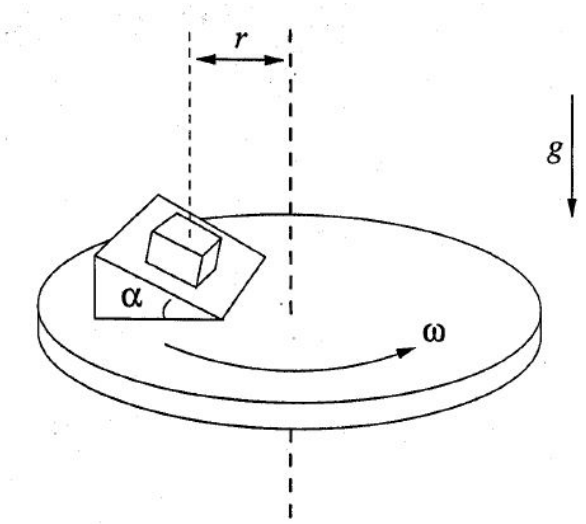
**QP21**




An inclined plane of angle $\alpha$ is glued onto a horizontal turntable, as shown in the figure. A block is placed on the included plane a distance $r$ from the axis of rotation of the turntable, and the coefficient of friction between the block and the plane is $\mu$. The turntable spins about its axis with constant angular frequency $\omega$.

a) (1 point) Draw a free body diagram for the block, showing the forces that act on it.

b) (2 points) Find an expression for the minimum angular velocity, $\omega_c$, to keep the block from sliding down the plane, in terms of $g$, $r$, $\mu$ and the angle of the plane $\alpha$.