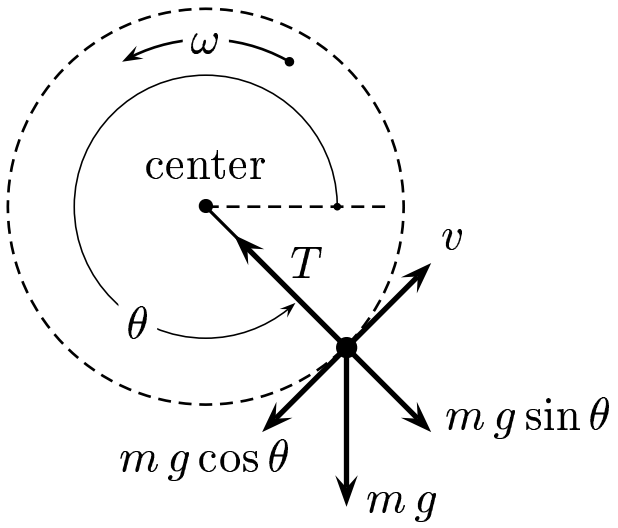
For the counter-clockwise circular motion below, the equation of motion is given by $\vec{T} + m\,\vec{g} = m\,\vec{a}_{cp}$. Let T, $m\,g_{\parallel r} = |m\,g\sin\theta|$, $m\,g_{\perp r} = |m\,g\cos\theta|$, and a_{cp} be positive definite quantities.



The tangential equation is

A) $T - m\,g_{\perp r} = m\,a_{tangential}$.

B) $T + m\,g_{\perp r} = m\,a_{tangential}$.

C) $m\,g_{\perp r} - T = m\,a_{tangential}$.

D) $m\,g_{\perp r} = -m\,a_{tangential}$.

E) $m\,g_{\perp r} = m\,a_{tangential}$.

Explanation: By inspection for the tangential equation.

This implies that the magnitude of the total acceleration as observed in the inertial frame is $a = \sqrt{a_{cp}^2 + g^2}$.

Answer **E**.

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