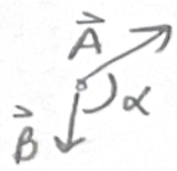
Quiz 49 (5 minutes) (Practice)

$v_{fx} = v_{ix} + a_x \Delta t$	A kinematics equation for constant acceleration
$x_f = x_i + v_{ix}\Delta t + \frac{1}{2}a_x \Delta t^2$	Another kinematics equation for constant acceleration
$v_{fx}^2 = v_{ix}^2 + 2a_x \Delta x$	Another kinematics equation for constant acceleration
$x_f = x_i + v_x \Delta t$	Position as a function of time for constant velocity
$a_x = \frac{\Sigma F_x}{m}$ or $\vec{a} = \frac{\Sigma \vec{F}}{m}$	Newton's second law
$F = \frac{G m_1 m_2}{r^2}$	Newton's Law of Universal Gravitation
$g = (G m_A)/r^2$	The gravitational field g in terms of G, m_A and r
$F_G = m_o g$	The gravitational force on an object m_o, in terms of m_o and g.
$f_{s\,max} = \mu_s n$	Static friction
$f_k = \mu_k n$	Kinetic friction
$v_t = \frac{\Delta s}{\Delta t}$	Definition of tangential speed
$\theta = \frac{s}{r}$	Definition of angular position (radians)
$\omega = \frac{\Delta \theta}{\Delta t}$	Definition of angular velocity
$\alpha = \frac{\Delta \omega}{\Delta t}$	Definition of angular acceleration
$\Delta\theta = \frac{\Delta s}{r}$ or $\Delta s = r\Delta\theta$	Relationship between arc length traveled and angular displacement
$v_t = \omega r$	Relationship between tangential speed and angular speed
$a_r = \frac{v_t^2}{r}$	Radial acceleration for uniform circular motion in terms of v_t
$a_r = \omega^2 r$	Radial acceleration for uniform circular motion in terms of ω
$E_i + \Sigma transf = E_f$	Law of conservation of energy
$\vec{A} \cdot \vec{B} = AB\cos\alpha$	The definition of the dot product (α is the angle between $\vec{A}$ & $\vec{B}$)
$W = \vec{F} \cdot \Delta\vec{r}$	Work done by a constant force
$W = \int_a^b \vec{F} \cdot d\vec{r}$	Work done by a variable force
$\Delta U = -W$	Relationship between change in ΔU and W for a conservative force
$F = -\frac{dU}{dr}$	Equation for finding a F function from a U function
$F = -kx$	The spring force
$K = \frac{1}{2}mv^2$	Kinetic energy
$E_{th} = f_k d$	Increase in thermal energy due to kinetic friction
$U_G = mgy$	Gravitational potential energy near Earth's surface
$U_{sp} = \frac{1}{2}kx^2$	Spring potential energy



See the next page for help with the linear + rotational variables

Linear Variables		Connections between Linear + Rotational		Rotational variables	
position	s (distance along arc)	$\theta(\text{rad}) = \frac{s}{r}$ or $s = \theta r$		position	θ
velocity	$v_t = \frac{\Delta s}{\Delta t}$	$v_t = \omega r$		velocity	$\omega = \frac{\Delta \theta}{\Delta t}$
acceleration	$a_t = \frac{\Delta v_t}{\Delta t}$	$a_t = \alpha r$		accel	$\alpha = \frac{\Delta \omega}{\Delta t}$

I am Quiz 49.

(PRACTICE ☺)

Physics Facts? No
Calculator? No

Do not turn me over until instructed.

When the timer begins,
you will have a strict 4 minutes to complete me.

New: If the writing does not stop immediately when the timer goes off,
one point will be deducted from the score.

Scoring Rubric

There are 29 equations. Your score is based on the # correct in 5 minutes:

0 to 4 = 1 pt
5 to 8 = 2 pts
9 to 13 = 3 pts
14 to 18 = 4 pts
19 to 23 = 5 pts
24 to 29 = 6 pts