Final Exam

Remember:
Show all your work for full credit. Minimum of 3 steps:
What equation are you plugging into?
What numbers are you substituting?
What is your final answer?
Ask if anything seems unclear.
Vectors have 2 components or magnitude and direction!

Have fun over break!

Formulae and Constants:

\[ x = x_0 + v_{0x}t + \frac{1}{2}a_x t^2 \]
\[ x = x_0 + \frac{1}{2} (v + v_0)(t - t_0) \]
\[ v_x^2 = v_{0x}^2 + 2a_x(x - x_0) \]
\[ a_c = \frac{v^2}{r} \]
\[ f_s = \mu_s F_n \]
\[ f_k = \mu_k F_n \]
\[ F_{spring} = -kx \]
\[ U_{spring} = \frac{1}{2}kx^2 \]
\[ F_G = \frac{G M_1 m_2}{r^2} \]
\[ U_{gravity} = -G \frac{m_1 m_2}{r} \]

\[ A \cdot B = AB \cos \theta = A_x B_x + A_y B_y + A_z B_z \]

\[ K = \frac{1}{2} m v^2 \]
\[ W = \int \vec{F} \cdot d\vec{r} = -U \]
\[ W_{net} = K_f - K_i \]
\[ E_i + W_{n-c} = E_f \]
\[ \text{Impulse} = \int \vec{F} \ dt \]
\[ \vec{p}_i + \text{Impulse} = \vec{p}_f \]
\[ \vec{p} = m \vec{v} \]

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