Tuesday, January 7/14
Physics 122/121

Exam Review - Incline Plane Problem

Tests - Unit 2

1. Textbook: Page 646, #11-14
   Textbook: Page 655, #20-24
   Textbook: Page 678, 42-45, 47, 50
   Textbook: Page 696, #4-10
   #4. 4.00 V (text: 40.0 V)
   #8. 75 s (text: 57 s)
   Textbook: Page 708, #16-20
   Textbook: Page 714, #21-26
   Textbook: Page 719, #27-31

Already assigned.

2. Parallel Circuits - Continue Tomorrow

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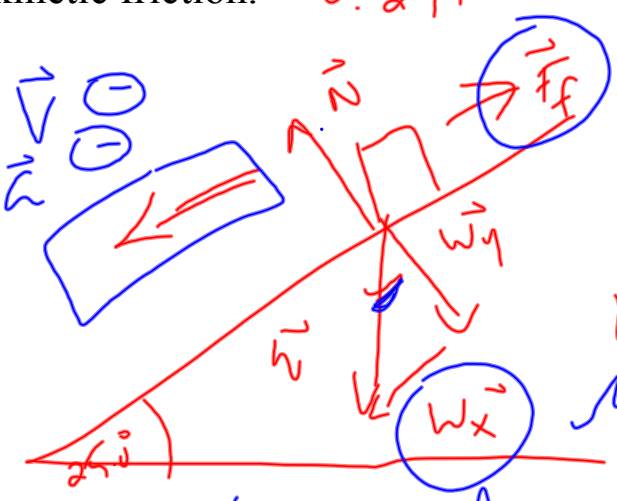
3. Textbook: Page 724, #32-35

4. Combination/Complex Circuits

5. Textbook: Page 728, #36-37
   Page 749, #33-34

Exam Review - Incline Plane Problem

A 10.0 kg box accelerates at 2.00 m/s^2 as it slides down a ramp that makes an angle of 25.0^o with the horizontal. Find the coefficient of kinetic friction. 0.241



$\vec{F}_{net} = m\vec{a}$

$+ F_f - W_x = -ma$ (3)

$\mu N - W\sin 25.0^\circ = -ma$

$\mu W\cos 25.0^\circ - W\sin 25.0^\circ = -ma$ (1)

$\mu mg\cos 25.0^\circ - mg\sin 25.0^\circ = -ma$ (1)

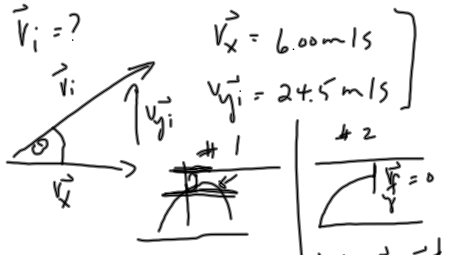
$\mu = \dfrac{g\sin 25.0^\circ - a}{g\cos 25.0^\circ}$ (1)

$\mu < 1$

$\mu = \dfrac{(9.80)\sin 25.0^\circ - (2.00)}{9.80\cos 25.0^\circ}$

$\mu = 0.241$ (1)

1. $\vec{V}_i = ?$ $\vec{V}_x = 6.00\ m/s$ $\vec{V}_{yi} = 24.5\ m/s$



$\vec{V}_{yf} = 0$

$\vec{y} = \vec{V}_{yi}t + \frac{1}{2}\vec{a}t^2$

$0 = \vec{V}_{yi} + \frac{1}{2}\vec{a}t$

$\vec{V}_{yi} =$ ___ 5.0s

$\vec{V}_{yf} = \vec{V}_{yi} + \vec{a}t$

$\vec{V}_{yi} =$ ___ 2.5s

$\vec{V}_i =$ ◯, ◯

Pyth + tan θ

$V_i = 25\ m/s, 76°NofE$

b) 99m

#2 Conversions

$r = 3.6 \times 10^8\ m$

$T = 1.8 \times 10^4\ s$

$T = 2\pi\sqrt{\frac{r^3}{GM}}$ a) $M = 8.5 \times 10^{24}\ kg$

$T^2 = \frac{(2\pi)^2 r^3}{GM}$ b) $2.7 \times 10^3\ m/s$

$F = \frac{GMm_E}{r^2}$ c) $3.7 \times 10^9\ kg$

$W = mg$

$g = \frac{GM}{r^2}$

3. a) $E_T = 0.40\ J$

b) $V = 2.0\ m/s$

c) $V_{max} = 2.3\ m/s$

4. $\vec{a} = -1.77\ m/s^2 \Rightarrow \vec{g}$

5. draw = 6.0

Level 1: #1. 23°

#3. a) 5.8 N, up

b) $V = 3.6\ m/s$