

# Chapter 10 - Torque and Rotational Dynamics

## Physics 206

### Group 1 Problems:

Problem 1:

$$|F_T| = 420 \text{ lbs}$$
$$|F_{Hinge}| = 369 \text{ lbs}$$

Problem 2:

$$t = 2.15 \text{ s}$$

Problem 3:

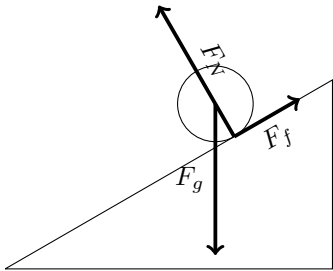
$$h = 15.3 \text{ m}$$

Problem 4:

$$\mu = 0.482$$

### Group 2 Problems:

Problem 5:



$$a = \frac{5}{7}g \sin \beta$$
$$\mu_s = \frac{2}{7} \tan \beta$$

Problem 6:

$$\alpha = 16.3 \text{ rad/s}^2 \text{ and it will decrease}$$
$$\omega = 5.70 \text{ rad/s}$$

Problem 7:

$$\tau_f = -0.0524 \text{ Nm}$$

Problem 8:

$$a_1 = 2.882 \text{ m/s}^2$$
$$a_2 = 6.125 \text{ m/s}^2$$

### Group 3 Problems:

Problem 9:

$$F_{Lever} = 1300 \text{ N}$$

Problem 10:

$$F_R = 293 \text{ N}$$
$$\alpha = 16.2 \text{ rad/s}^2$$

Problem 11:

$$M = 540 \text{ kg}$$
$$F_T = 661.5 \text{ N}$$

Problem 12:

$$F = 4000 \text{ N}$$
$$t_{min} = 2.53 \text{ s}$$