

HW5-11 Soln)

Let up and to the right be the positive directions.

NII:

$$x: +F - F_{fs} = ma_x = 0 \text{ (constant velocity)}$$

$$y: +F_N - gm = ma_y = 0$$

$$F_{fs} = \mu_s F_N \text{ (crit. sit.)}$$

Then,

$$\mu_s = \frac{F_{fs}}{F_N} = \frac{F}{gm} = \frac{70}{10(120)} = 0.058$$

And

$$x: +F - F_{fk} = ma_x = 0$$

$$y: +F_N - gm = ma_y = 0$$

$$F_{fk} = \mu_k F_N$$

Then,

$$\mu_k = \frac{F_{fk}}{F_N} = \frac{F}{gm} = \frac{55}{10(120)} = 0.046$$