Exercises in Physics
Assignment 8

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P1.

$G = mg = 50 \times 9.8 = 490N$
$F_f = \mu_k N = 0.25 \times 490 \times \cos 30° = 106.088N$
$F = \mu_k N = 490 \times \sin 30° = 245N$
$F = ma = 50 \times 2 = 100N$
$F = 451.088N$
$P = 451.088N / \cos 30° = 520.87N$

P2.

(a)

$20 \times 9.81 = 196.2N$
$\frac{30N}{2} = 15N$
$196.2 - 15 = 181.2N$
$181.2 \div 30 = 6.04m/s^2$

(b)

$20 \times 9.81 = 196.2N$
$\frac{30N}{2} = 15N$
$196.2 - 15 = 181.2N$
$181.2 \div (30 + 20) = 3.624m/s^2$

P3.

$a = \frac{F}{m} = \frac{P}{10}$
$\frac{da}{dt} = \frac{dP}{dt}$
$a_0 = \frac{P_0}{m} = 0$
$a_1 = \frac{P_1}{m} = 5m/s^2$

$V = 2 \times 5 \div 2 = 5m/s$

$ads = vdv$

$\int sds = \int_0^5 vdv$

$[\frac{v^2}{2}]_0^5 = 12.5 = s$