Test 2 2005 (Answers)

1. $v_f = \sqrt{\frac{2H}{m \sin\theta}\left(P(\cos\theta - \mu\sin\theta) - mg(\sin\theta + \mu\cos\theta)\right)}$

2. $\frac{1}{2c}\left(x_s^2 - B^2\right) + \left(x_s - B\right) - \frac{kA^2}{2\mu_0 mg} = 0$

3. $v_x(t^*) = \frac{b}{m}\cos\theta\,\frac{t^{*2}}{2} - \frac{P}{m}t^*$

$x(t^*) = \frac{b}{m}\cos\theta\,\frac{t^{*3}}{6} - \frac{P}{m}\frac{t^{*2}}{2} = L$

4. $U = \frac{a}{2x^2} - \frac{b}{4x^4} + c$