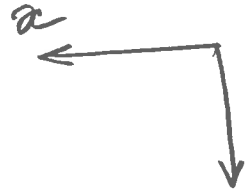
Test 1 2007 (answers)

1. a) $\alpha + 2\beta t$

b) $x(2s) - s(1s) = \frac{3}{2}\alpha + \frac{7}{3}\beta$

2. 

$F_{4x} = -m_1 g + m_3 g \sin\theta_1$

$F_{4y} = -m_2 g - m_3 g \cos\theta_1$

3. a) $x_p(t) = L$

$y_p(t) = \frac{1}{2} a_c t^2$

b) $x_G(t) = \frac{\alpha t^2}{2} + v_i \cos\theta\, t$

$y_G(t) = \frac{\beta t^3}{6} - v_i \sin\theta\, t + H$

c) $\frac{\alpha t^2}{2} + v_i \cos\theta\, t = L$

$\frac{\beta t^3}{6} - v_i \sin\theta\, t + H = \frac{1}{2} a_c t^2$

4. a) $a_x = \frac{P\cos\theta}{m}$

b) $P = \frac{F_c - mg}{\sin\theta}$

c) $a_x = \frac{P\cos\theta - \mu(mg + P\sin\theta)}{m}$