Answers Test 1 2005

1. $v(t) = \alpha\frac{t^2}{2} + W$

$$x(t) = \frac{\alpha t^3}{6} + Wt + A - 2W - \frac{4}{3}\alpha$$

2. $v_x = 2\alpha t$, $v_y = \beta$, $a_x = 2\alpha$, $a_y = 0$

$x(0) = C_1 = R\cos\theta$

$y(0) = C_2 = R\sin\theta$

3. $$\begin{cases} \frac{\alpha T^4}{12} + \frac{\beta T^3}{6} + v(0)\cos\theta\, T = D \\ -\frac{gT^2}{2} + v(0)\sin\theta\, T + H = 0 \end{cases}$$

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

$$v_x = \sqrt{2a_x\frac{H}{\sin\theta}}$$

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