Answers test 1 2006

1. a) $C_1 = w - 5k_1 T_A^4 - 2k_2 T_A$

$C_2 = D$

$a(t) = 20 k_1 t^3 + 2k_2$

b) $T_1 = \frac{Mg}{\sin\theta}$

$T_2 = Mg \cot\theta$

2. $x_{max} = \frac{1}{6} \frac{k_2^3}{k_1^2}$

3. a) $x(t) = v_1 \cos\theta \cdot t$

$y(t) = -\frac{\beta t^3}{6} + v_1 \sin\theta\, t + A$

b) $v_1 = \frac{c}{\cos\theta} \left(\frac{\beta}{6(c\tan\theta + A - D)} \right)^{1/3}$

4. a) $P = \frac{M_A + M_B}{M_B} \frac{T_c}{\cos\theta}$

b) $P = \frac{\mu M_A g + T_c \left(1 + \frac{M_A}{M_B}\right)}{\cos\theta - \mu \sin\theta}$