2012-Fall midterm1

1(a) x=-2 y=7 z=-1

1(b) 10^{113}

2

$$f_{min}{}^2 = \frac{g}{4\pi^2 r}\frac{1-\mu_s \cot\theta}{\cos\theta + \mu_s \sin\theta}$$

3.(a)

$v_B = 20\sqrt{2} \sim 28.3 \text{ m/s}$

$\sin\alpha = \frac{12\sqrt{2}}{v_B} = \frac{3}{5}, \left(\text{or } \cos\alpha = \frac{4}{5},\ \alpha \sim 37^0\right)$

$t = \frac{2v_B \sin\theta}{g} = 4 \text{sec.}$

3.(b)

$\Rightarrow \tan\theta = 2, \left(\text{or } \cos\theta = \frac{1}{\sqrt{5}},\ \sin\theta = \frac{2}{\sqrt{5}}\right)$

$v_B = 20\sqrt{5} \sim 44.7 \text{ m/s}$

$x = 64 + 8t = 128 \text{ m}$

$y = 12t = 96 \text{ m}$

$\text{or } r = \sqrt{x^2 + y^2} = \sqrt{128^2 + 96^2} = 160 \text{ m}$

4.

$A_x = \frac{13}{21}g \rightarrow ; \quad a_x = \frac{11}{21}g \rightarrow ; \quad a_y = \frac{1}{21}g \uparrow$

選擇題

1	2	3	4	5	6	7	8
G	B	B	H	B	D	D	F