0.8

1. $V_x = V_0 \cos\alpha$

$V_y = V_0 \sin\alpha$

$\Rightarrow R_x = V_x t$

$R_y = V_y t - \frac{1}{2} g t^2$

$R = \sqrt{R_x^2 + R_y^2}$

$\Rightarrow R = \sqrt{125 - 70\sqrt{2}}$

2. $V_{x1} = -b + 2ct$

$a_{x1} = 2c$

$V_{y1} = 3dt^2$

$a_{y1} = 6dt$

当 $t = 5$

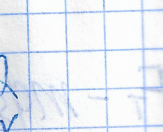
$a_{y1} = 30d$

$\Rightarrow a = \sqrt{a_x^2 + a_y^2}$

$= \sqrt{4 + 3600}$

$\approx 60 m/s^2$

3.



$T_f = \mu mg = \mu(mg - F\sin\alpha)$

$F\cos\alpha = T_f$

$\Rightarrow F = \frac{\mu mg}{\sin\alpha + \mu\cos\alpha}$

$F_{min} \Rightarrow (\sin\alpha + \mu\cos\alpha)_{max}$

$\sin\alpha + \cos\alpha = \sqrt{2}\sin(\alpha + \frac{\pi}{4})$

$\Rightarrow \alpha = \frac{\pi}{4}$