$$V_x = V_0 \cos\alpha \ (1)$$

$$x = V_0 \ \cos\alpha \cdot t \ (2)$$

$$V_y = V_0 \sin\alpha - gt \ (3)$$

$$y = V_0 \sin\alpha \ \cdot \ t - \frac{gt^2}{2} \ (4)$$

$$x = S; y = \ -h \ (5)$$

$$V = \sqrt{V_x^2 + V_y^2} \ (6)$$

$$t_1 = \frac{V_0 \sin\alpha + \sqrt{V_0^2 \sin\alpha + 2gh}}{g}$$

$$S = \frac{V_0^2 \sin\alpha \cdot \cos\alpha + V_0 \cos\alpha \sqrt{V_0^2 \sin^2\alpha + 2gh}}{g} \ (7)$$

$$V_y = -\sqrt{V_0^2 \sin^2\alpha + 2gh} \ (8)$$

$$V = \sqrt{V_0^2 + 2gh} \ (9)$$

$$y = \tan x \ \cdot x - \frac{g}{2V_0^2 \cos^2\alpha} \cdot x^2$$