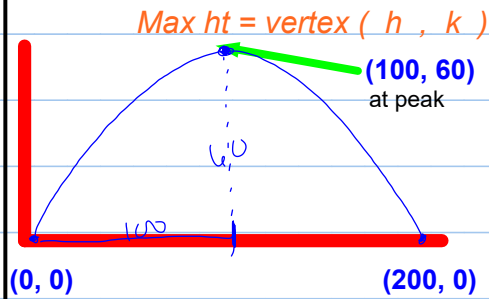


Unit 4 Modeling with Math, Projectile Motion pg 51



Projectile motion can be modeled with a quadratic function.

standard form

$$y = ax^2 + bx + c$$

factored form

$$y = a(x - X_{int_1})(x - X_{int_2})$$

vertex form

$$y = a(x - h)^2 + k$$

Start by finding "a", use factored form

(0,0) (100,60) (200,0)

$\frac{1}{2}$ ground distance \uparrow \uparrow ht

$$y = a(x - 0)(x - 200)$$

$$60 = a(100 - 0)(100 - 200)$$

$$60 = a(100)(-100)$$

$$\underline{60 = a(-10,000)}$$

$$-10,000 \quad -10,000$$

$$-0.006 = a$$

Use a in the factored form to get standard form

$$y = -0.006(x - 0)(x - 200)$$

$$y = \underline{-0.006x(x - 200)}$$

$$y = -0.006x^2 + 1.2x$$

Add equation work here once you have the data collected for your two x-intercepts.