Equations & Formulas Used for Corn Hole Game

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Assignment 5

CSC 480

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Basic Projectile Motion Formulas

Max height of projectile equation:

Horizontal motion equation:

Simplified horizontal motion equation:

Derived time equation:

Vertical motion equation:

Simplified vertical motion equation

Solve for minimum velocity with angle = 0° and maximum horizontal distance = 475m.

Solve for maximum velocity with angle = 45° and maximum horizontal distance = 925m.

Find equation to solve for horizontal distance when given angle θ, velocity V, YF = -180, a = -9.8m/s.

Vertical motion equation:

Quadratic formula:

Put vertical motion equation in quadratic form:

Variables:

Use variables to solve quadratic formula for t:

We want the negative value of the square root because this will make the numerator negative. Dividing a negative numerator by a negative denominator will give us a positive value for t, which cannot be negative as time is not negative.

Law of Sines

C

B

b

c

A

a

We will use the law of sines to find the horizontal distance A of the bag when it is at its highest height B. We are given the angle b from the selected power and angle c since the triangle is a right angle. These are the following values using the variable names from the program: