

Hwmk 11

Math 528 Summer Session 1

Due 6/8 (Tuesday at 11:59 pm)

1 Strong Man

Suppose you are playing the carnival game **High striker**. A first order model of the game is modeled by a system with a delta driving force (simulating the hammer strike). After the striking force is applied, gravity begins to take affect. This behavior can be captured with the differential equation (modified no drag gravity equation):

$$h'' = 64\delta(t - 1) - g\theta(t - 1)$$

where g is gravity ($32\frac{ft}{s}$), $\theta(t)$ is the Heaviside function, and $\delta(t)$ is the delta function. Also, assume $h(0) = 0$, and $h'(0) = 0$.

- (a) Laplace transform the DE and solve for $H(s)$.
- (b) Invert the transform using your tables.
- (c) What is the max height reached?

2 Confused and Convolutated

- (a) Problems 8 and 10 pg.237