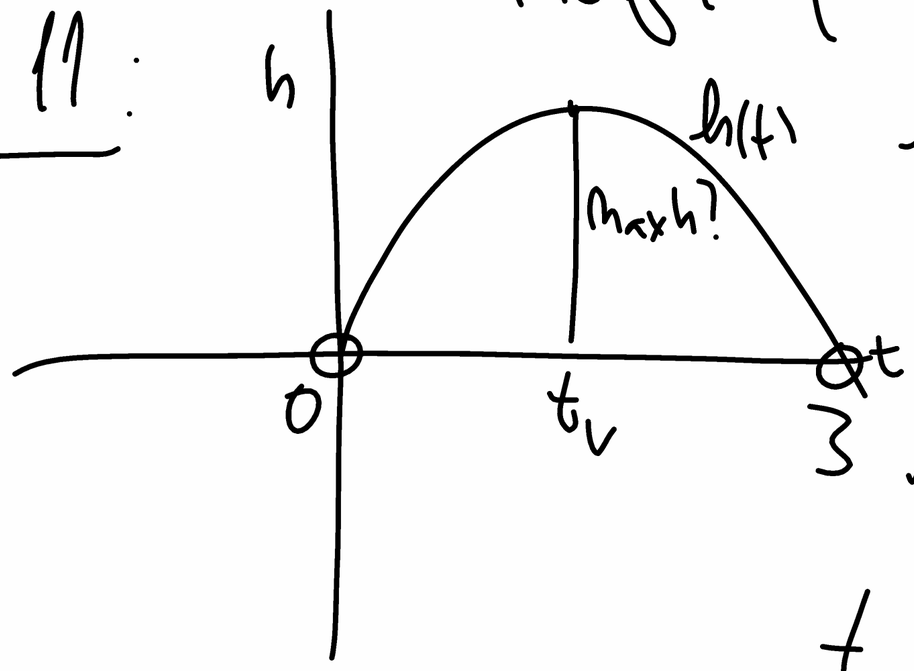
ASSIGNMENT 1

Tue 26 FEB 2019

Exes. 11:



Height of water from hose

$$h(t) = -5t^2 + 15t = -5t(t-3)$$

$$a = -5 \quad d = 0 \quad e = 3$$

$$h_{max} = h(t_V)$$

$$t_V = \frac{0+3}{2} = \frac{3}{2}$$

$$f(t) = a(t-d)(t-e)$$

$$(-5)(t-0)(t-3) = -5t(t-3)$$

$$h_{max} = h\left(\frac{3}{2}\right) =$$

$$= -5 \cdot \frac{3}{2}\left(\frac{3}{2} - 3\right) =$$

$$= -\frac{15}{2} \cdot \left(\frac{3}{2} - \frac{6}{2}\right) =$$

$$= -\frac{15}{2}\left(-\frac{3}{2}\right) = +\frac{45}{4}$$

Reminder: Zeros of a Quadratic form in factor form:

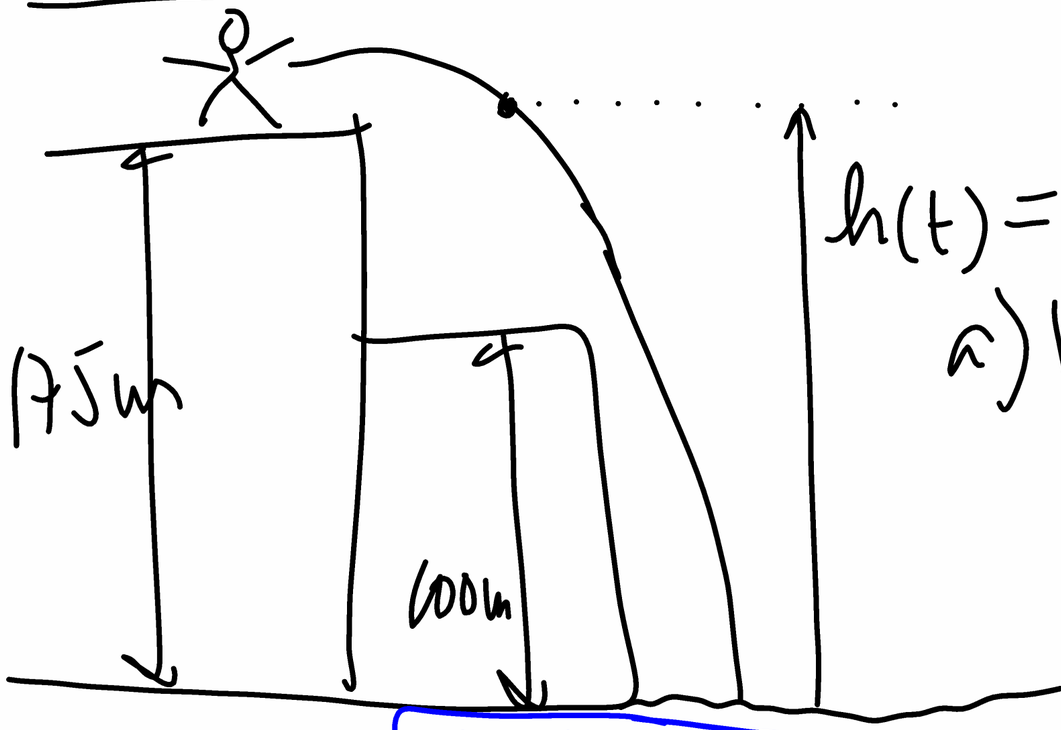
a) $f(x) = 3(x-2)(x-5)$

zeros are $x=2$ & $x=5$

b) $f(t) = -3(x+7)(x+9)$ $\therefore x=-7$ $x=-9$

c) $g(s) = 4(x-8)x$ $x=0$ $x=8$

Exercise 14



h in metes
t in seconds

$a=-5 \quad b=10 \quad c=175$

$h(t) = -5t^2 + 10t + 175$

a) When will ball reach water?

Ans: It reaches the water at the time t when $h(t)=0$

Hence, in order to answer this question we must determine the zeros of $h(t)$

$$t = \frac{-10 \pm \sqrt{10^2 - 4(-5)\cdot 175}}{2\cdot(-5)}$$

$$= \frac{-10 \pm \sqrt{100 + 3500}}{-10} = \frac{-10 \pm \sqrt{3600}}{-10} = \frac{-10 \pm 60}{-10} = t$$

$$= \frac{50}{-10} = -5$$ Negative time NO sense

$$= \frac{-70}{-10} = 7$$ Correct solution

b) When will ball reach 100 m?

Ans: It will be at the time t when $h(t) = 100$