9WP HW

Memorize: $H = -16T^2 + VT + S$

PG 579 #'s 51, 52, 53

51 KI $V = 11$ ft/sec, $S = 0$ ft, $H = 0$ ft

$0 = -16T^2 + 11T + 0$

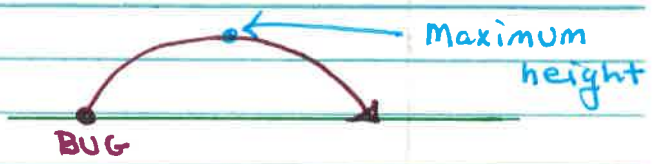
$0 = -T(16T - 11)$

$-T = 0$ → $t = 0$

$16T - 11 = 0$ → $T = 11/16 \approx .6875$

Cat will land on the ground in about 0.69 sec

52 KI: $V = 10$ ft/se, $S = 0$ ft



(a) write an EQUATION TO model function: $H = -16T^2 + 10T$ OR $h(t) = -16T^2 + 10T$

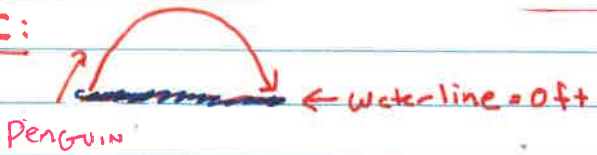
(b) Given time is .3125 seconds ($T = .3125$) find the height:

$H = h(.3125) = 0 - 16(.3125)^2 + 10(.3125)$

$H = 1.5625$

THE MAXIMUM HEIGHT THE BUG CAN JUMP IS 1.5625 FT or about 1.56 ft

53 KI:



$V = 4.5$ ft/sec

$h = -16t^2 + 4.5t$

$0 = -t(16T - 4.5)$

$-t = 0$ → $t = 0$ sec

$16T - 4.5 = 0$ → $t = \frac{4.5}{16} \approx .28$

EXPLAIN: There are 2 solutions (mean Zeros)

(1) $t = 0$ seconds is when the penguin leaps out of the water.

(2) $t = .28$ seconds is when the penguin lands back in the water.

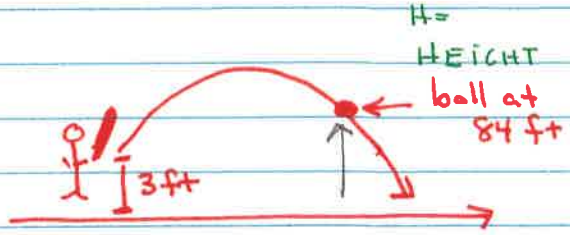
9WPHW

PG 599 #25

25 KI $V = 72$ ft/sec

$S = 3$ ft

$H = 84$ ft



MODEL FOR

(a) EQUATION: $h = -16T^2 + 72T + 3$ OR $h(t) = -16T^2 + 72T + 3$

(b) More KI $H = 84$ ft

$84 = -16T^2 + 72T + 3$

$-84 \quad\quad -84$

$0 = -16T^2 + 72T - 81$

$0 = -1(16T^2 - 72T + 81)$

$0 = -1(4T - 9)(4T - 9)$

$0 = -1(4T - 9)^2$

NOTICE: 1ST & LAST TERMS ARE PERFECT SQUARES

$4T - 9 = 0$

$+9 \quad +9$

$\frac{4T}{4} = \frac{9}{4}$

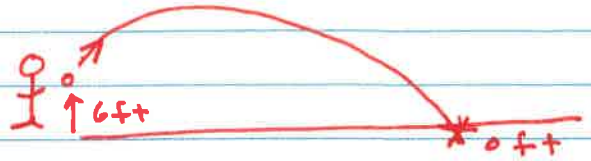
$T = 9/4 = 2.25$

IT will take 2.25 seconds before the ball is 84 ft above the ground.

9wp HW

Page 616 #'s 49 + 57

49 KI: $V = 46$ ft/sec
$H = 0$ ft
$S = 6$ ft



$h = -16T^2 + VT + S$

$0 = -16T^2 + 46T + 6$

$0 = -2(8T^2 - 23T - 3)$

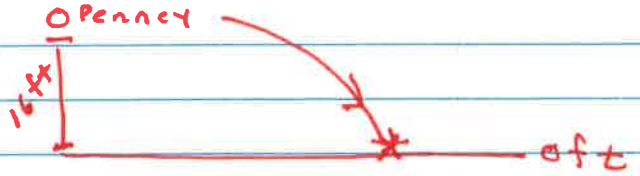
$0 = -2(8T + 1)(T - 3)$

$-2 \neq 0$ $\quad 8T + 1 = 0$ $\quad T - 3 = 0$

$T = -\frac{1}{8}$ $\quad (T = 3)$

The ball will land on the ground in 3 seconds.

57 KI: $S = 16$ ft
$H = 0$ ft
$V = 0$ ft/sec



$0 = -16T^2 + 0T + 16$

$0 = -16(T^2 - 1)$

$0 = -16(T - 1)(T + 1)$

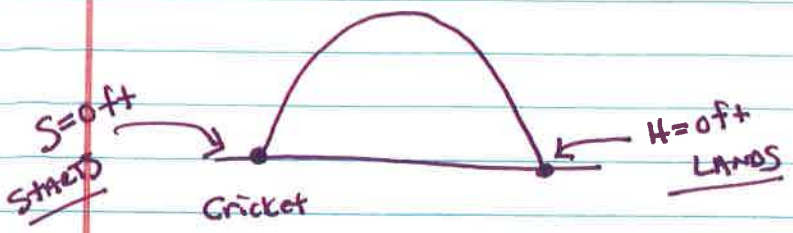
$T - 1 = 0$ $\quad (T = 1)$ $\quad T + 1 = 0$ $\quad (T = -1)$

The penney will land on the ground in 1 second.

9WP HW

CH 9 PRACTICE TEST Pg 621 #32

$V = 4$ ft/sec



(a) $H = -16T^2 + VT + S$ WRITE EQUATION TO MODEL THIS FUNCTION

$H = -16T^2 + 4T + 0$

$H = -16T^2 + 4T$ OR $h(t) = -16T^2 + 4T$

(b) Solve for $H = 0$ ft

$0 = -16T^2 + 4T$

$0 = -4T(4T - 1)$

① FACTOR
② SET FACTORS TO "0"
③ SOLVE

$-4T = 0$ $\quad$ $4T - 1 = 0$

$T = 0$ $\quad$ $T = 1/4$

(ANSWER IN WORDS) THE CRICKET WILL LAND ON THE GROUND AT .25 Seconds.