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Projectile Motion

1. A window-cleaning squeegee was dropped from a window-cleaning scaffold platform 1,200 feet above the sidewalk. $-16t^2+1200$

   a. How many seconds will it take the squeegee to hit the ground?

   $t = 8.66$ Seconds

   b. What is the sponge's velocity JUST BEFORE it strikes the ground?

   $v(t) = -32t$ $\quad -277.12$ fps

   c. How many seconds will it take to fall 500 feet and how fast will it be traveling?

   $t =$ ~~5.59~~ 5.59 sec's $\quad$ ~~-277.66~~ fps $\quad -178.8$ fps

2. After dropping the squeegee from problem #1 the window cleaner trips, which causes his sponge to fly upward at a velocity of 64 feet per second from the platform (1,200 feet above the ground). $y = -16t^2 + 64t + 1200$

   a. How many seconds will it take the sponge to hit the ground?

   10.89 Seconds

   b. How long will it take the sponge to return to the same level as the platform?

   4 seconds

   c. How high will the squeegee be when its velocity is +~~20~~feet per second?

   $20 = -32t + 64$ $\quad t = 1.375$ $\quad$ 1257.75' above ground

3. Once the window cleaner's supplies have either fallen or been tossed, the dejected window cleaner picks up his bucket and throws it downward at a velocity of 80 feet per second toward the bed of his pickup truck parked on the street below (1,195' below the scaffold).

   $y = -16t^2 - 80t + 1195$

   $-32t - 80$

   a. How many seconds will it take the bucket to hit the bed of the truck?

   $t = 6.5$ Seconds

   b. How long will it take the bucket to be 100 feet above the truck's bed?

   $t = 6.14$ Seconds

   c. What will the bucket's velocity be when it is five feet above the truck's bed?

   $t = 6.48$ $\quad v(6.48) = -287.36$ fps.

   $0 = -16t^2 + 20t +$

4 Later in the day a worker drops a paint bru

$h = 829.44$ which hits the ground 7 seconds later - how hig