Challenge #15

Sophia Kovalevskaya has noticed that the population of zombies in Hurricane, Utah is doubling every 6 days. When she counted on Jan 1, 2010, there were 246 of them.   How many zombies will there be 3 weeks later? When did this zombie thing begin? When will the entire population of the town be zombies? The 2010 Census shows 13.7 thousand people.

Challenge #15 Solution

Zombies double every 6 days.

In January, 2010 there were 13,700 people & 246 zombies.
How many zombies three weeks later?

in 3 weeks
$t = 21$ days
we know formula:
new value
$= \text{old value} * 2^{t/T_d}$
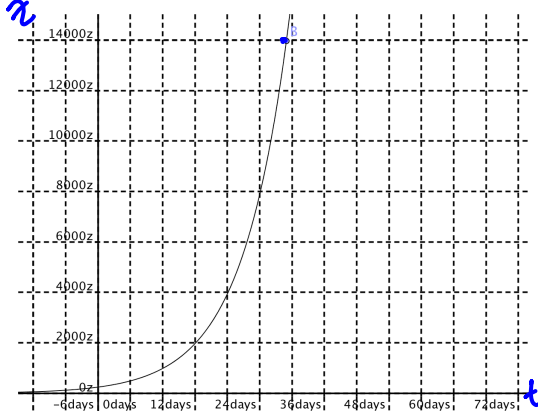$z = 246\left(2^{21/6}\right)$
$\simeq 2783$ zombies

let $t = 0$
on Jan 1st, 2010
$T_d = 6$ days

(days)

t	z (zombies)
-48	1
-42	2
-36	4
-30	8
-24	16
-18	31
-12	61.5 $\simeq$ 62
-6	123
0	246
6	492
12	984
18	1968

When did it start?

48 days before 1/1/2010.
~ Nov. 13, 2009

When will everyone be a zombie?

$t = ?$ when
$z = 13,700$
solve.
$13700 = 246\left(2^{t/6}\right)$

when $t = 34$, $z = 246\left(2^{34/6}\right) \simeq 12,496$

and if $t = 35$, $z = 246\left(2^{35/6}\right) \simeq 14,026$

$\Rightarrow$ entire town will be zombies by
day 35 (on Feb. 5th, 2010)