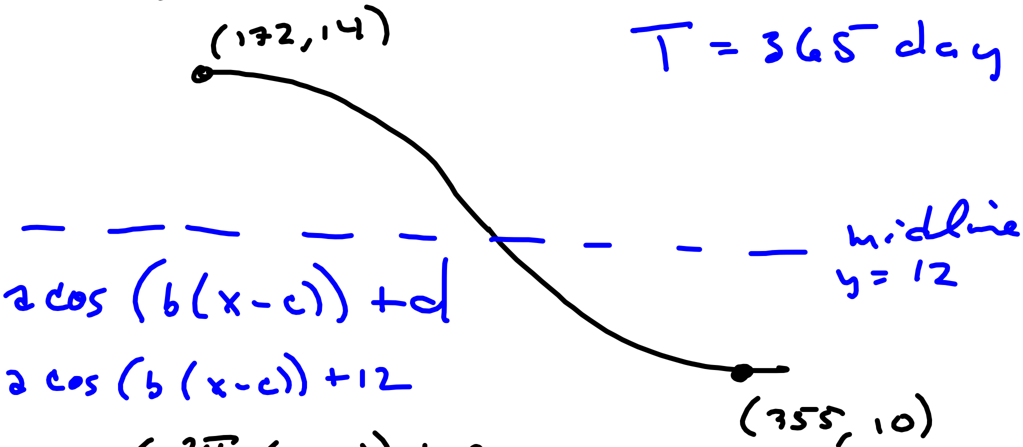
$t = 172$ 14 hrs

$t = 355$ 10 hrs



$T = 365$ days

$a\cos(b(x-c)) + d$

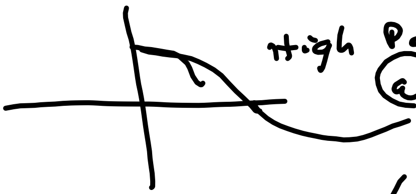
$a\cos(b(x-c)) + 12$

$a\cos\left(\frac{2\pi}{365}(x-c)\right) + 12$

$T = 365$

$bx = 2\pi$ when $x = 365$

$b = \frac{2\pi}{365}$



High point @ $x = 172$

$a\cos\left(\frac{2\pi}{365}(x-172)\right) + 12$

Amplitude = 2, so

$2\cos\left(\frac{2\pi}{365}(x-172)\right) + 12 = f(x)$

March 31st = Day 90, so,

$f(90) = 2\cos\left(\frac{2\pi}{365}(90-172)\right) + 12$

```
Y4(6.999
        .0266720011
Y4(6.9999
           .0266672
2cos(2π/365*(90-
172))+12
        12.31711877
```

Hours of sun on 3/31, by my model.

26. A variable star is one whose brightness alternately increases and decreases. For the most visible variable star, Delta Cephei, the time between periods of maximum brightness is 5.4 days, the average brightness (or magnitude) of the star is 4.0, and its brightness varies by ± 0.35 magnitude. Find a function that models the brightness of Delta Cephei as a function of time.

Midline
$y = 4$

Amplitude
$.35$

$T = 5.4$ days

$bx = 2\pi$ when $x = 5.4$

$b = \frac{2\pi}{5.4} = \frac{20\pi}{54} = \frac{10\pi}{27} =$

$a = .35$

$d = 4$

$.35 \cos\left(\frac{10\pi}{27}x\right) + 4$

?

Wasn't sure where it started

weren't given a day/time for high point.

If $t = 0$ is midline value, then

$.35 \sin\left(\frac{10\pi}{27}x\right) + 4$

starts @ its midline