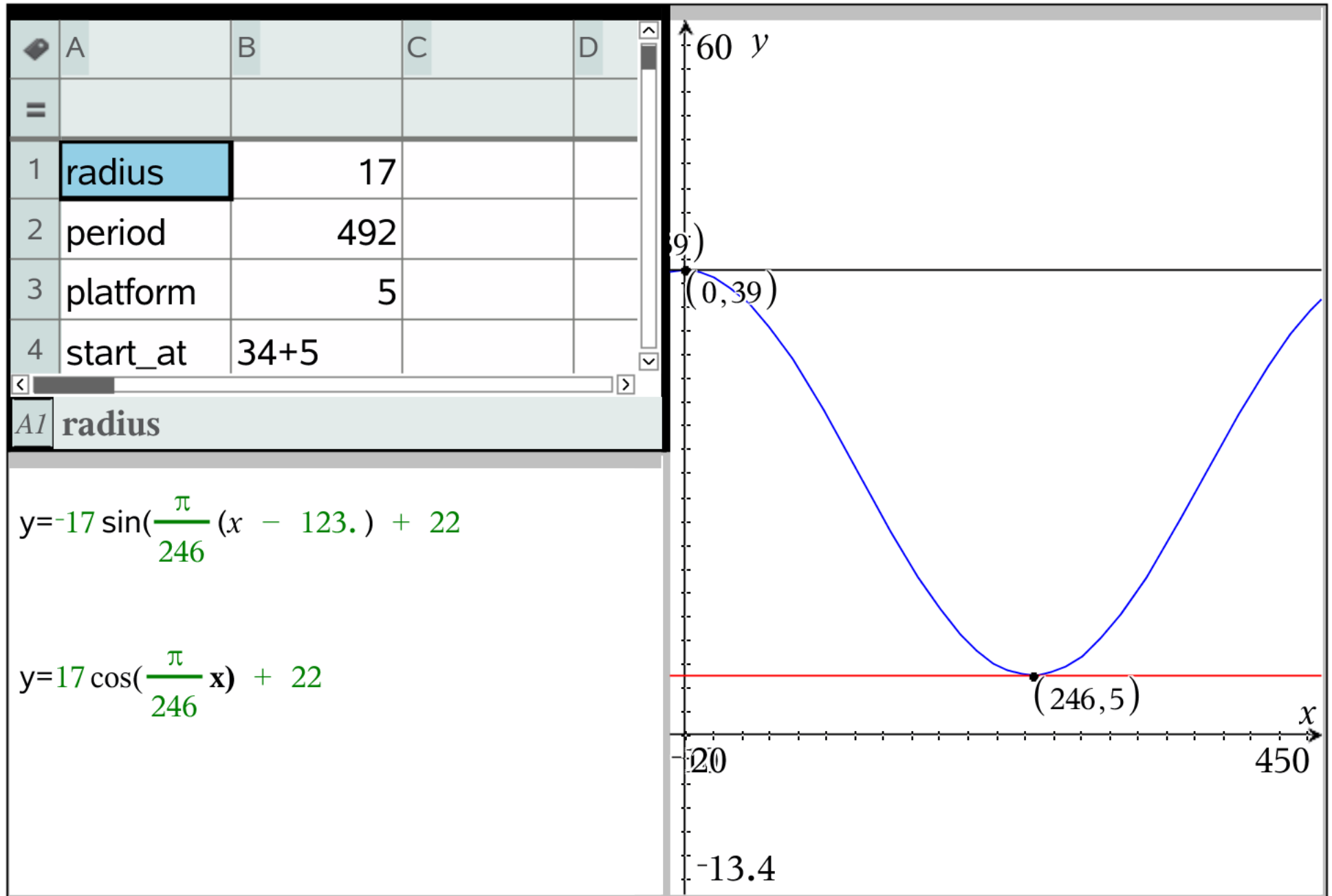
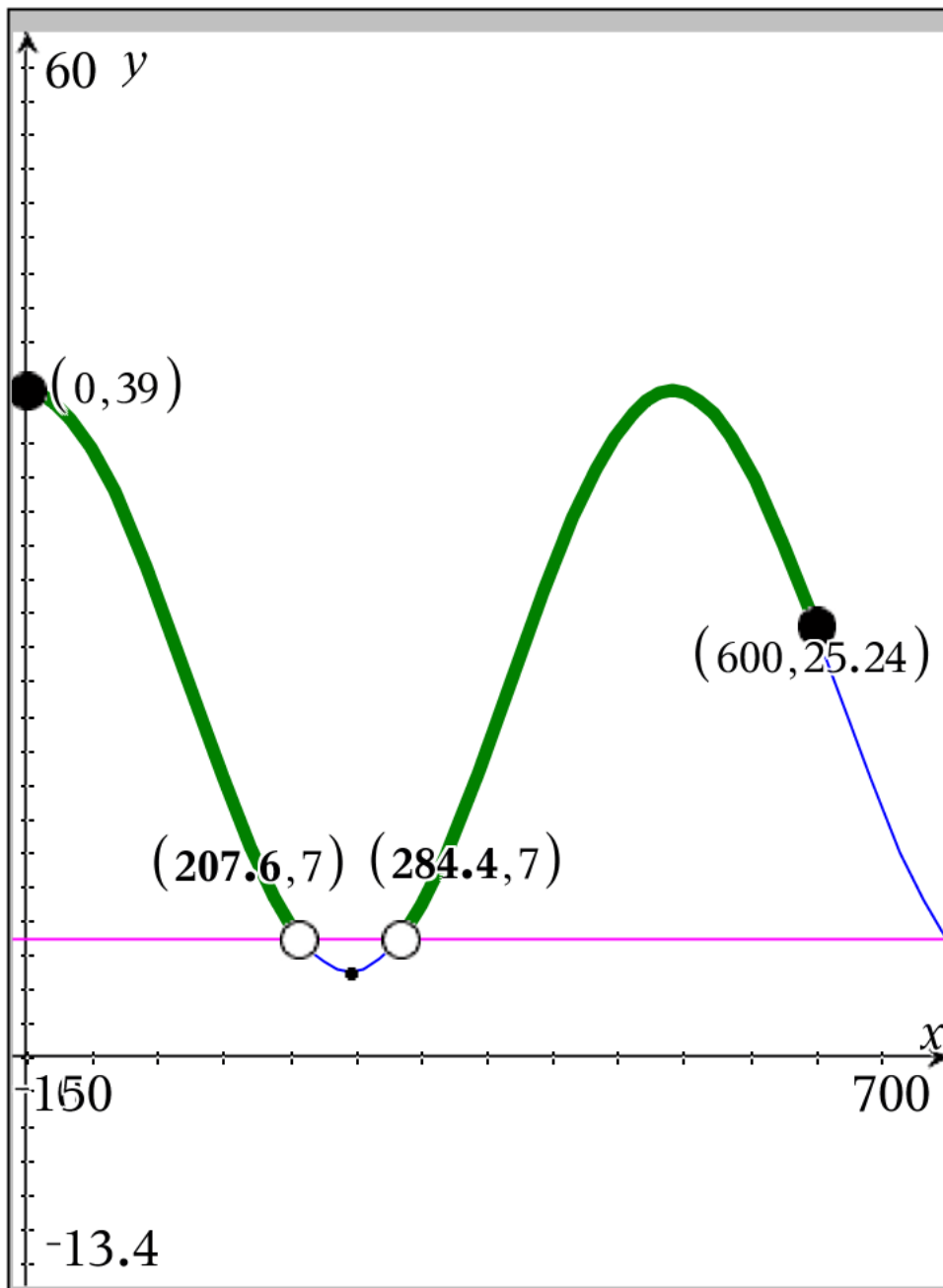


solutions to #9 and #10





$$y = -17 \sin\left(\frac{\pi}{246}(x - 123.)\right) + 22$$

$$y = 17 \cos\left(\frac{\pi}{246}x\right) + 22$$

When is the ferris wheel above 7 m above ground in the first 600 seconds

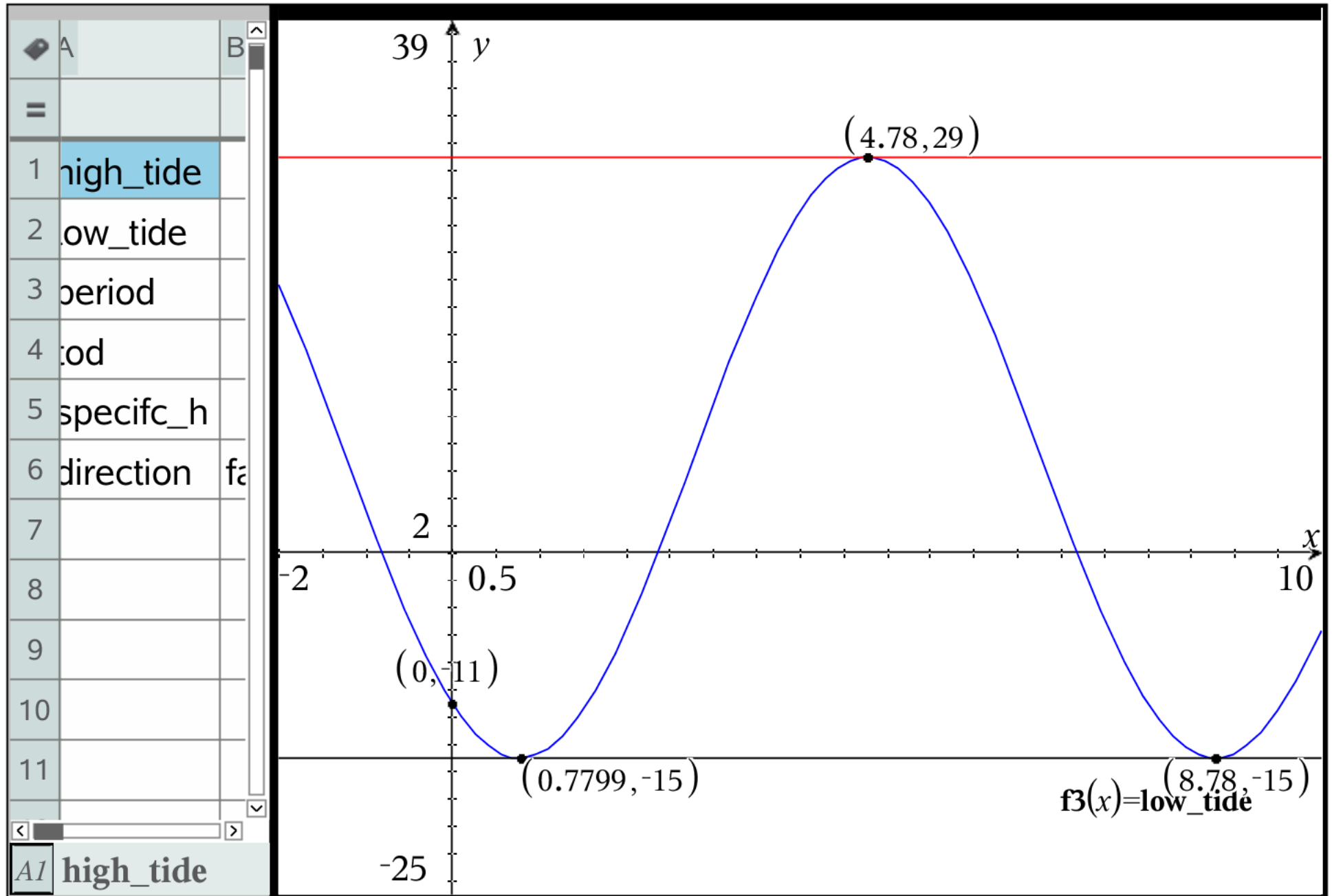
Bracket Notation

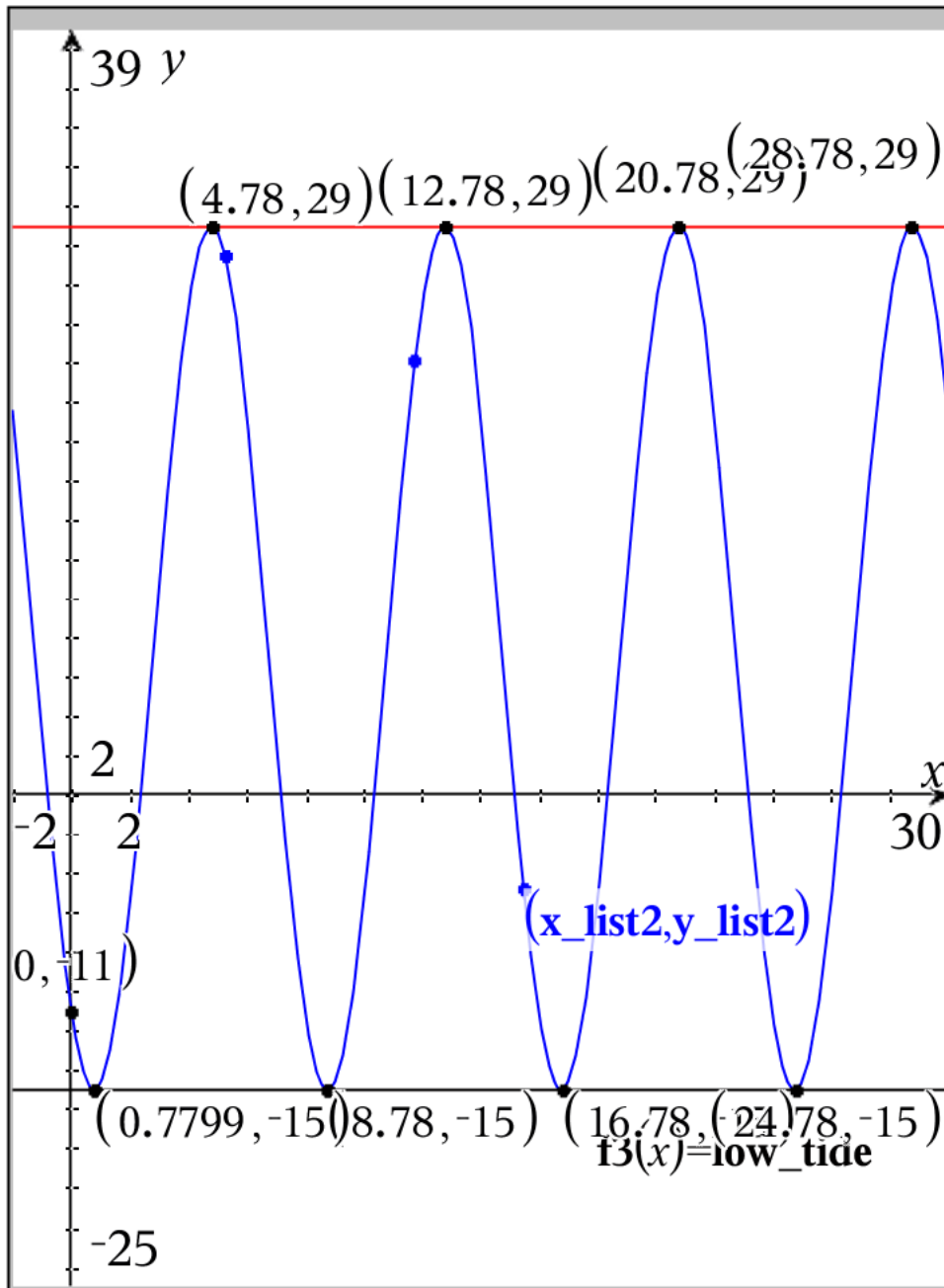
$$[0, 207.634) \text{ or } (284.366, 600]$$

Inequality Notation

$$0 \leq x < 207.634 \text{ or } 284.366 < x \leq 600$$

solutions to #11, #12, #13





High Tide occurs

4.77993 hours after 1:00AM

4. and 46.7957 minutes after 1:00AM

is 5: 47 AM

12.7799 hours after 1:00AM

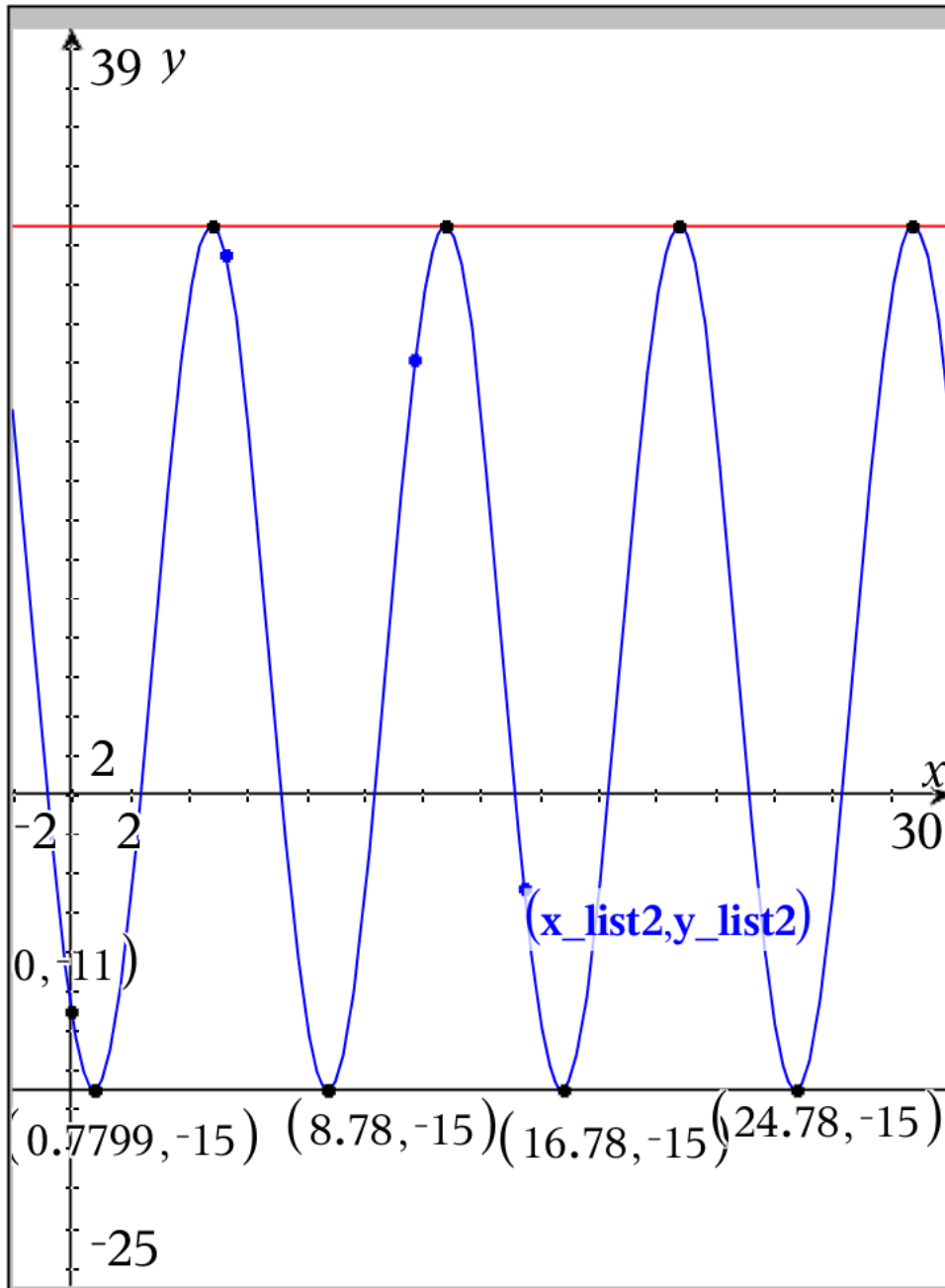
12. and 46.7957 minutes after 1:00AM

is 1: 47 PM

20.7799 hours after 1:00AM

20. and 46.7957 minutes after 1:00AM

is 9: 47 PM



Low Tide occurs

0.779929 hours after 1:00AM

0. and 46.7958 minutes after 1:00AM

is 1: 47 AM

8.77993 hours after 1:00AM

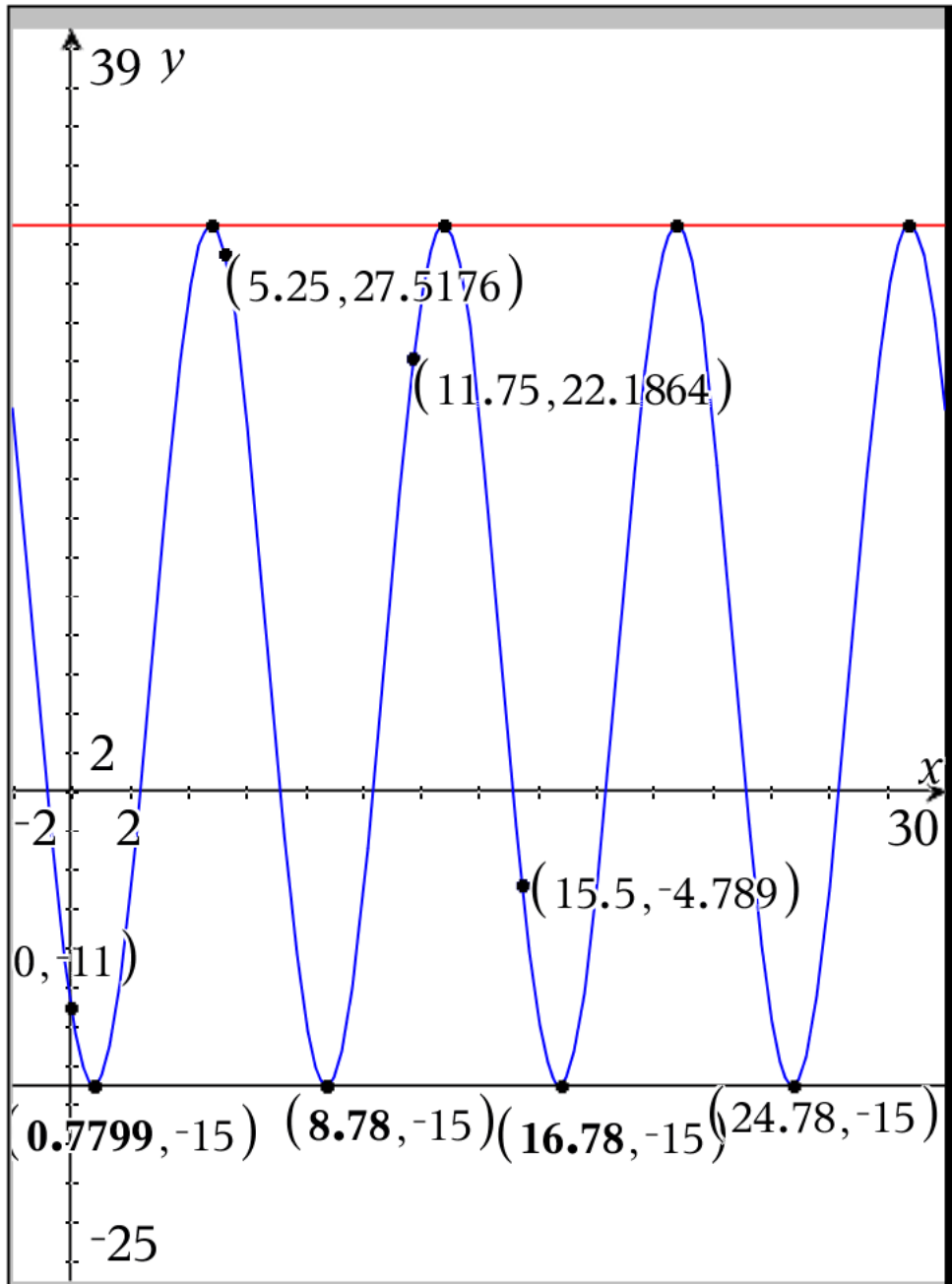
8. and 46.7957 minutes after 1:00AM

is 9: 47 PM

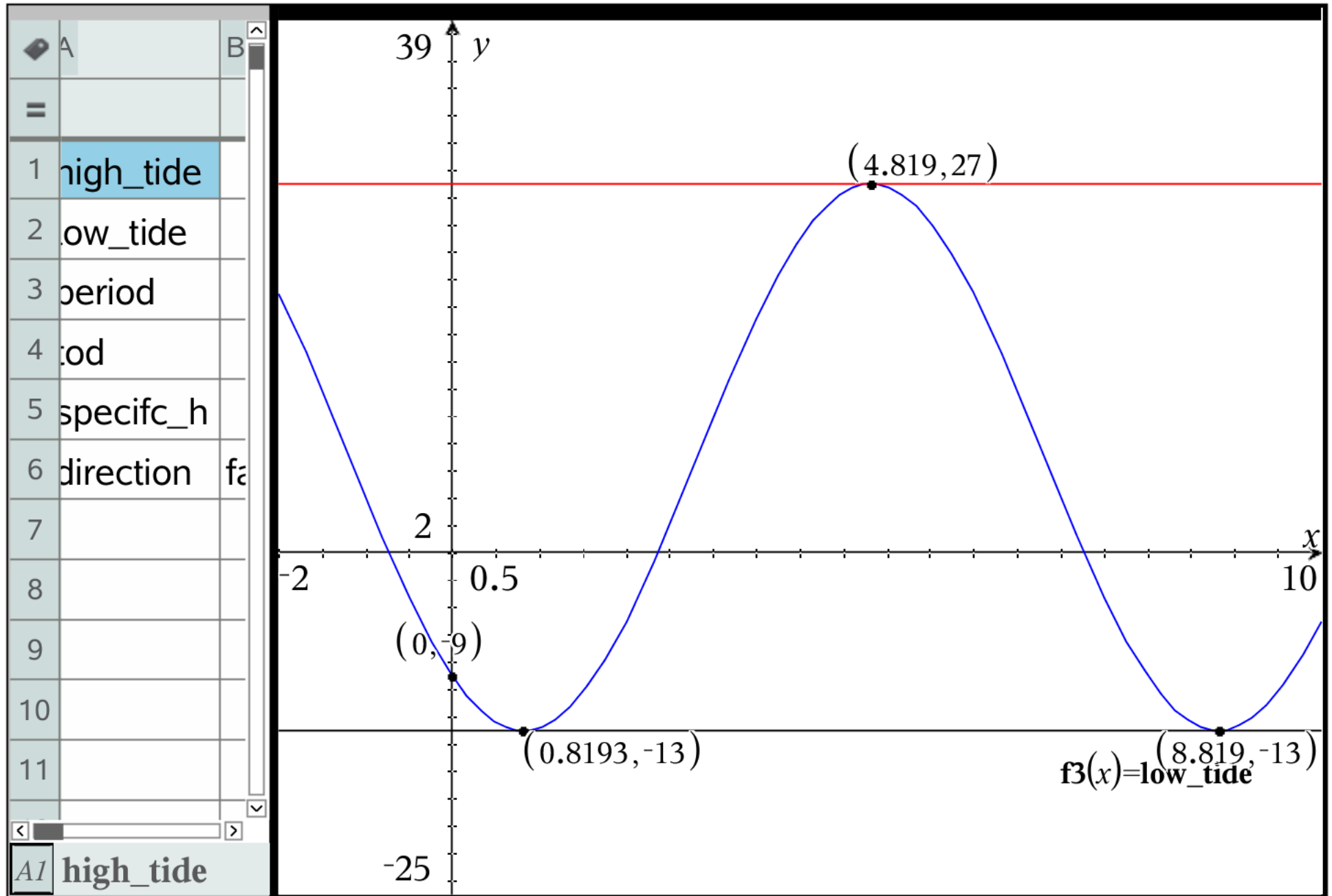
16.7799 hours after 1:00AM

16. and 46.7957 minutes after 1:00AM

is 5: 47 PM



Problem 3



$$y = -20 \cdot \sin\left(\frac{\pi}{4}(x + \text{shift})\right) + 7. \text{ must pass through } (0, -9)$$

$$-9 = -20 \cdot \sin\left(\frac{\pi}{4}(0 + \text{shift})\right) + 7. \text{ will result in } -9 = -20 \cdot \sin\left(\frac{\pi}{4}(\text{shift})\right) + 7.$$

$$-9 - 7 = -20 \cdot \sin\left(\frac{\pi}{4} \text{shift}\right) + 7 - 7. \text{ will result in } -16 = -20 \cdot \sin\left(\frac{\pi}{4} \text{shift}\right)$$

$$-16 / -20 = -20 \cdot \sin\left(\frac{\pi}{4} \text{shift}\right) / -20. \text{ will result in } \frac{4}{5} = \sin\left(\frac{\pi}{4} \text{shift}\right)$$

$$\sin^{-1}\left(\frac{4}{5}\right) = \frac{\pi}{4} \text{ shift} \text{ will result in } \frac{4}{\pi} \cdot \sin^{-1}\left(\frac{4}{5}\right) = \text{shift}$$

$$\text{shift} \approx 1.18067$$

$$y = -20 \cdot \sin\left(\frac{\pi}{4}(x + 1.18067)\right) + 7.$$



$$y = 20 \cdot \cos\left(\frac{\pi}{4}(x + \text{shift})\right) + 7. \text{ must pass through } (0, -9)$$

$$-9 = 20 \cdot \cos\left(\frac{\pi}{4}(0 + \text{shift})\right) + 7. \text{ will result in } -9 = 20 \cdot \cos\left(\frac{\pi}{4}(\text{shift})\right) + 7.$$

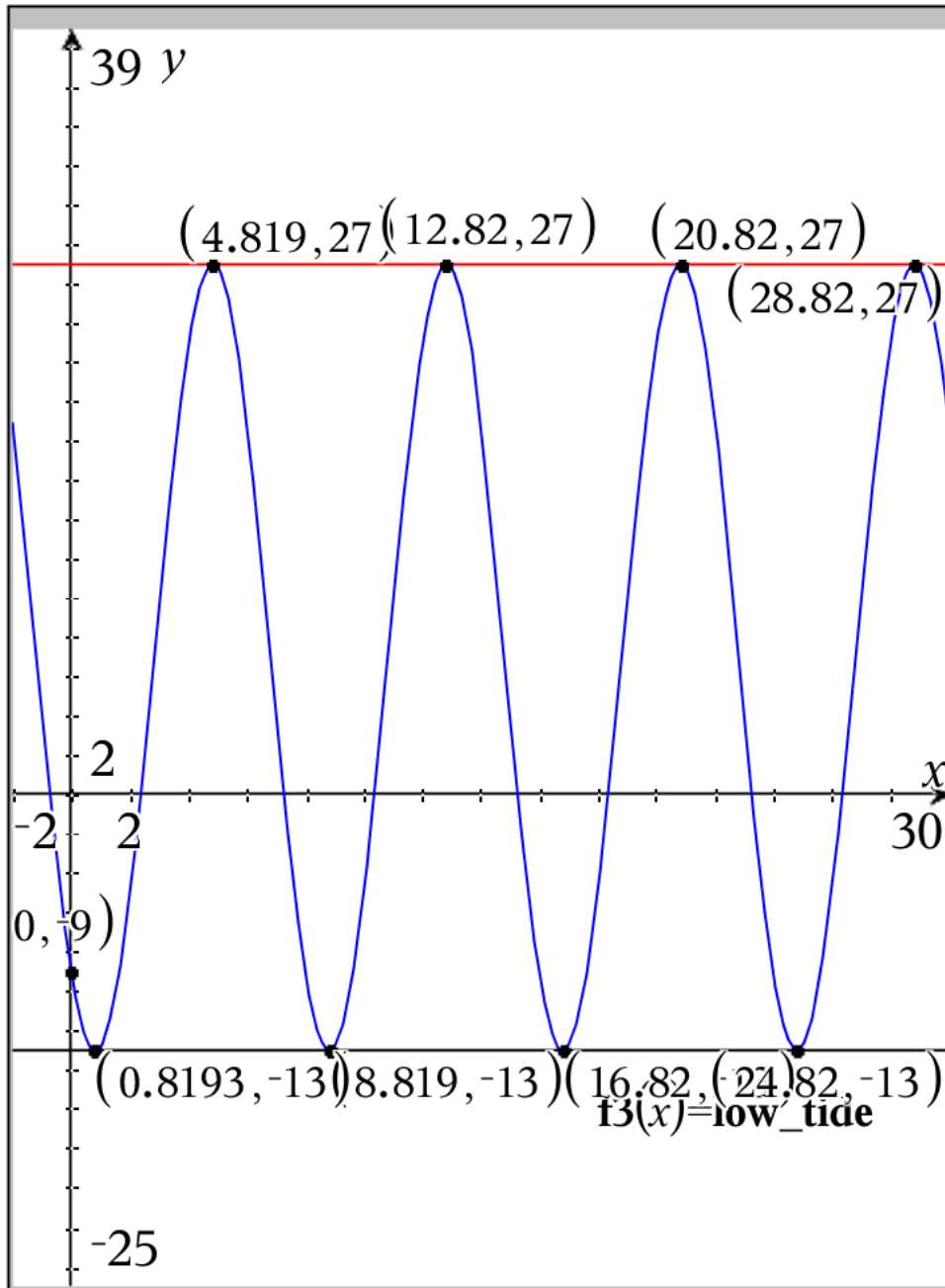
$$-9 - 7 = 20 \cdot \cos\left(\frac{\pi}{4} \text{shift}\right) + 7 - 7. \text{ will result in } -16 = 20 \cdot \cos\left(\frac{\pi}{4} \text{shift}\right)$$

$$-16/20 = 20 \cdot \cos\left(\frac{\pi}{4} \text{shift}\right)/20. \text{ will result in } \frac{-4}{5} = \cos\left(\frac{\pi}{4} \text{shift}\right)$$

$$\cos^{-1}\left(\frac{-4}{5}\right) = \frac{\pi}{4} \text{ shift} \text{ will result in } \frac{4}{\pi} \cdot \cos^{-1}\left(\frac{4}{5}\right) = \text{shift}$$

$$\text{shift} \approx 3.18067$$

$$y = 20 \cdot \cos\left(\frac{\pi}{4}(x + 3.18067)\right) + 7.$$



High Tide occurs

4.819 hours after 11:00AM

4. hours and 49.14 minutes after 11:00AM

is about 3:49 PM

12.819 hours after 11:00AM

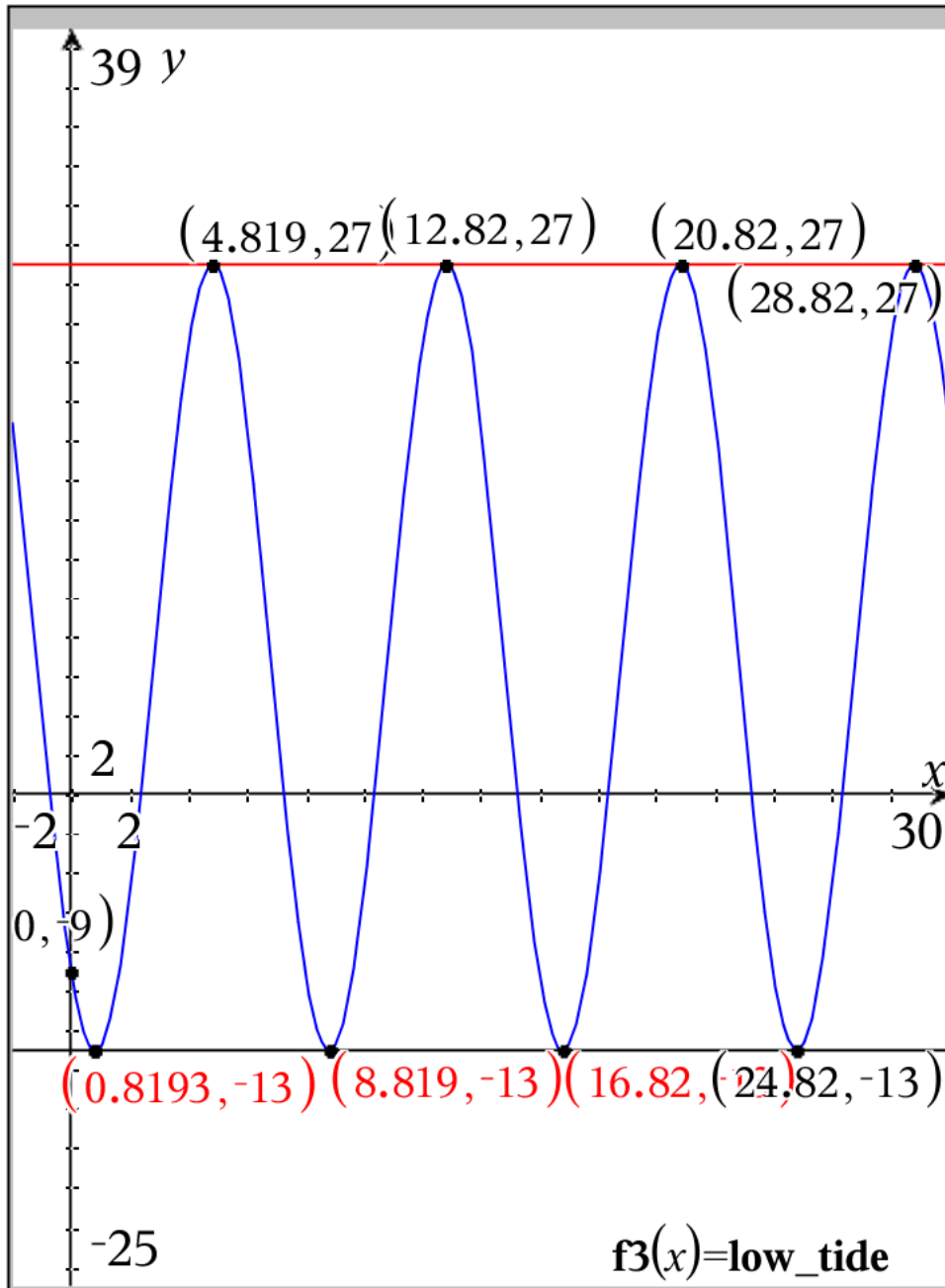
12. hours and 49.14 minutes after 11:00AM

is about 11:49 PM

20.819 hours after 11:00AM

20. hours and 49.14 minutes after 11:00AM

is about 7:49 AM next day



Low Tide occurs

0.8193 hours after 11:00AM

0 hours and 49.158 minutes after 11:00AM

is about 11:49 AM

8.819 hours after 11:00AM

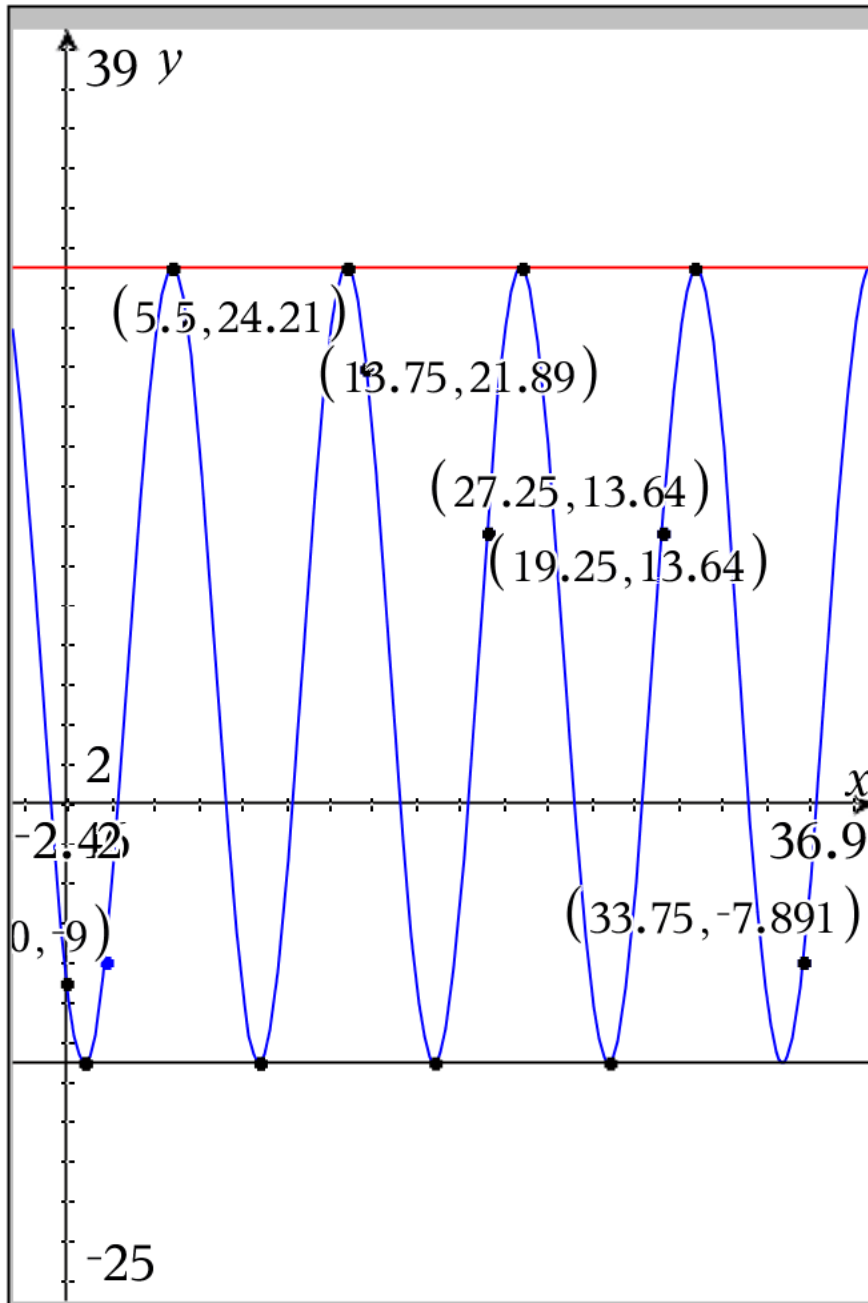
8 hours and 49.14 minutes after 11:00AM

is about 7:49 PM

16.819 hours after 11:00AM

16 hours and 49.14 minutes after 11:00AM

is about 3:49 AM



### Table completion

Since 4:30PM is 13.5 hours after 11:00AM

$$\text{related height} = f(13.5) = 24.2095$$

Since 6:15AM is 3.25 hours after 11:00AM

$$\text{related height} = f(3.25) = 13.6367$$

Since 12:45PM is 9.75 hours after 11:00AM

$$\text{related height} = f(9.75) = -7.89087$$

	A	B	C	D
=				
1	od	4:30 PM...	6:15 AM...	12:45 P...
2	hours_si...	13.5	3.25	9.7
3	height	24.2095	13.6367	-7.8908
4				
A1	"tod"			

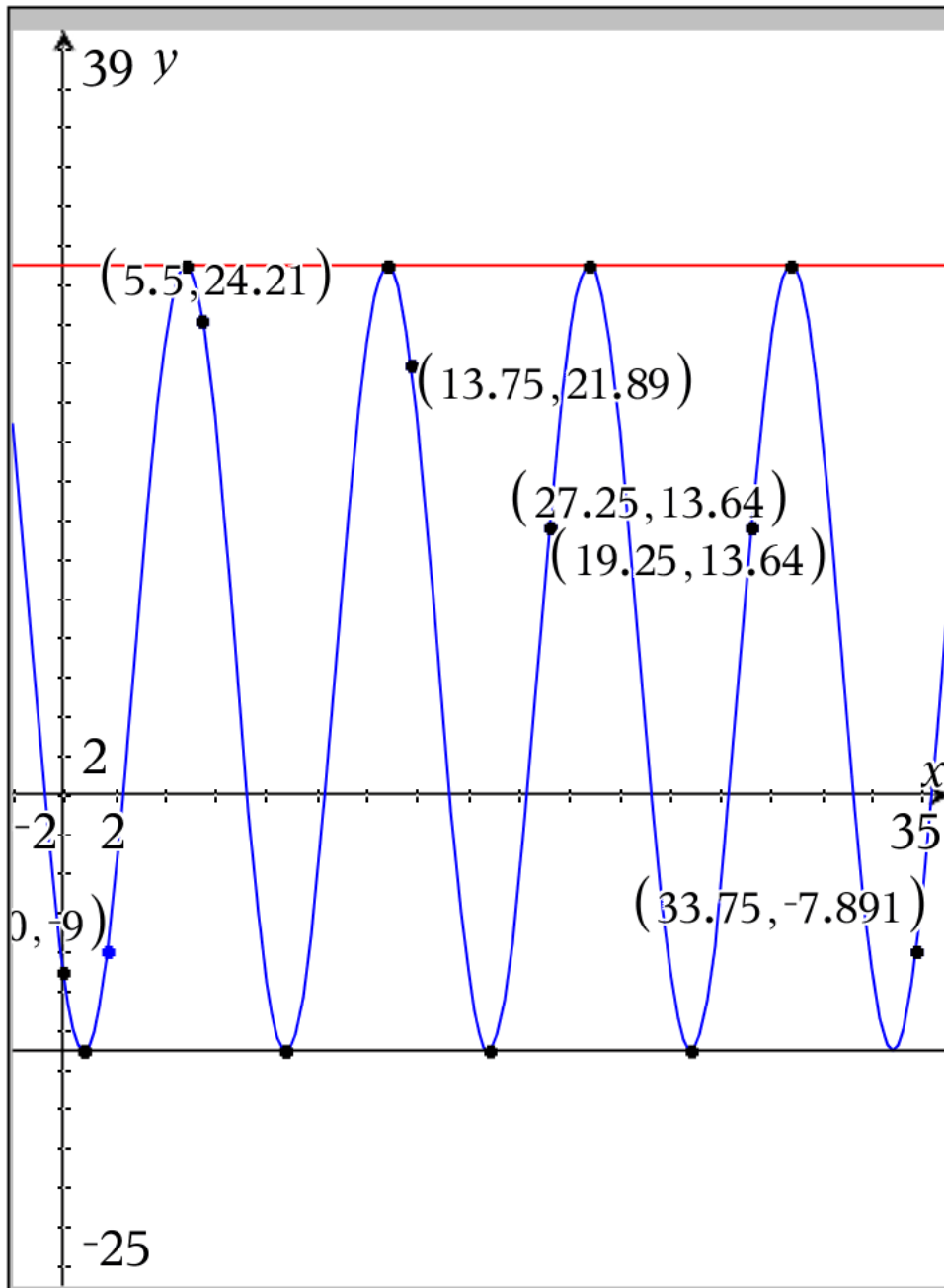


Table completion

some, but not many, assumed the next day on the last two times

Since 6:15AM is 27.25 hours after 11:00AM

related height =  $f(27.25) = 13.6367$

Since 12:45PM is 33.75 hours after 11:00AM

related height =  $f(33.75) = -7.89087$