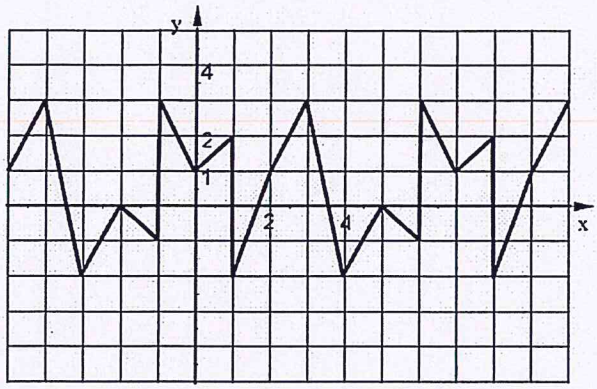
Bellwork Alg 2 Bellwork Friday, March 29, 2019

1. A hot air balloon is teethered to an anchor in the ground by a 150 foot long rope. The wind is blowing from the East. A person up in the balloon sees a person on the ground standing next to the anchor that the rope is tied to with an angle of depression of $52°$. How high up in the air is the balloon? Round to the nearest tenth of a foot.

2. Find the Period, Equation of the Midline, and the Amplitude for the periodic function below.



Period =

Eq of Midline:

Amplitude =

Questions 3 an 4 refer to the following information.

City	Number Residing
Boston	17,300
Chicago	17,900
Detroit	14,900
Philadelphia	20,700
Houston	6,500
Los Angeles	18,900
Miami	20,800
New York City	63,000
Newark	17,300
San Francisco	13,800
Washington, DC	4,900
Total	217,000

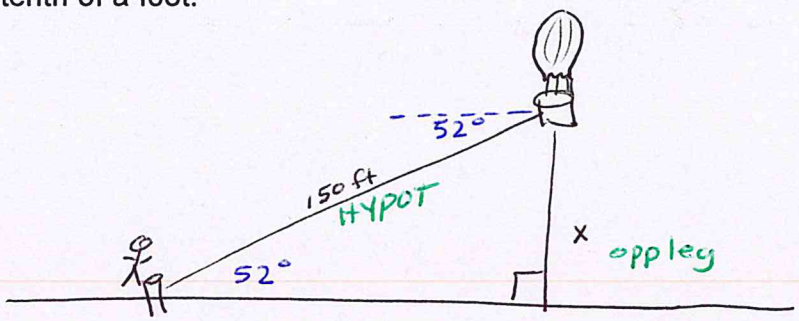
The table shows the number of Italian citizens who resided in eleven US cities on December 31, 2011.

3. The number of Italian Citizens residing in Philadelphia on December 31, 2010, was 15% greater than the number of Italian citizens residing in Philadelphia on December 31, 2011. How many more Italian citizens were residing in Philadelphia on December 31, 2010, than on December 31, 2011?

4. If an Italian citizen residing in one of the eleven US cities on December 31, 2011 is selected at random, what is the probability that the citizen was residing in either Boston, Houston, or New York City? (Express your answer as a decimal or fraction, not as a percent)

Bellwork Alg 2 Bellwork Friday, March 29, 2019 ANSWERS

1. A hot air balloon is teethered to an anchor in the ground by a 150 foot long rope. The wind is blowing from the East. A person up in the balloon sees a person on the ground standing next to the anchor that the rope is tied to with an angle of depression of 52°. How high up in the air is the balloon? Round to the nearest tenth of a foot.

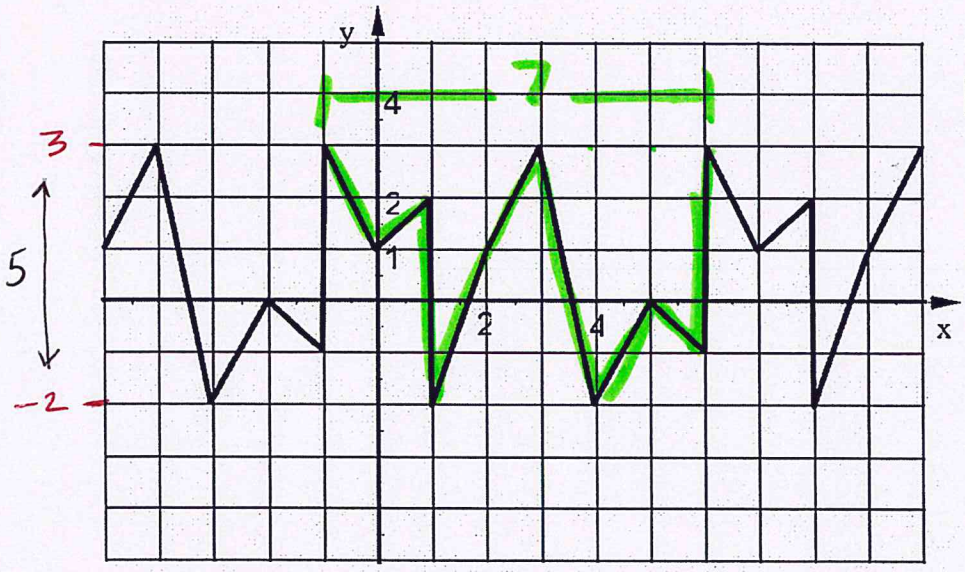


SOHCAHTOA

$150 \cdot \sin 52° = \frac{x}{150} \cdot 150$

$x = 118.2$ ft

2. Find the Period, Equation of the Midline, and the Amplitude for the periodic function below.



Period = 7

Eq of Midline: $y = 1/2$

Amplitude = $5/2$

max = 3
min = -2

Eq midline: $y = \frac{3+-2}{2} = \frac{1}{2}$

Amplitude: $\frac{3--2}{2} = 5/2$

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x = # citizens in Phil. on 12-31-10

$x = 1.15(20{,}700)$

$x = 23{,}805$

$23{,}805 - 20{,}700$

$= \boxed{3105}$

4. If an Italian citizen residing in one of the eleven US cities on December 31, 2011 is selected at random, what is the probability that the citizen was residing in either Boston, Houston, or New York City? (Express your answer as a decimal or fraction, not as a percent)

$$\frac{17{,}300 + 6{,}500 + 63{,}000}{217{,}000} = \frac{86{,}800}{217{,}000} = \boxed{0.4}$$