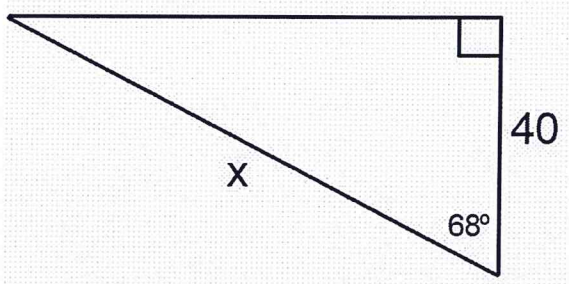
Bellwork Alg2 Monday, March 23, 2020

1. The half-life of a substance is 25 mintues. If there are 1200 mg of this substance at 11:00am, find the number of mg remaining at 2:30pm. Round to the nearest hundredth.

2. Sovle. $\log_6 x + \log_6(x-9) = 2$

3. Find the value of x to the nearest hundredth.



Bellwork Alg2 Monday, March 23, 2020 ANSWERS

1. The half-life of a substance is 25 mintues. If there are 1200 mg of this substance at 11:00am, find the number of mg remaining at 2:30pm. Round to the nearest hundredth.

$y = 1200(.5)^x$ ⟶ x = # 25 min periods

TOTAL TIME from 11:00am to 2:30pm IS 3.5 hrs

3.5 hrs
× 60 min/hr
210 min

$x = 210 \div 25 = 8.4$

$y = 1200(.5)^{8.4}$

$y = 3.55$ mg

2. Sovle. $\log_6 x + \log_6 (x-9) = 2$

1. write left side as a single logarithm: $\log_6 x(x-9) = 2$

2. Rewrite in exponential form: $6^2 = x(x-9)$

3. Simplify: $36 = x^2 - 9x$

4. Change to standard form: $0 = x^2 - 9x - 36$

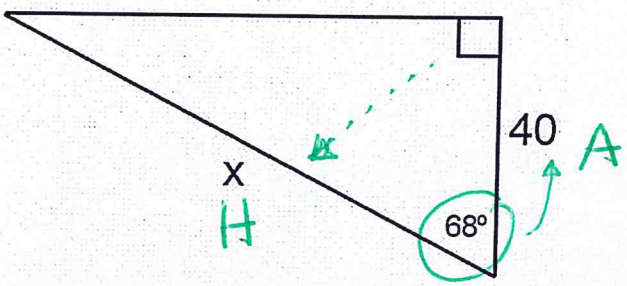
5. Solve by factoring: -36 → -12, $+3$, -9 $\quad 0 = (x-12)(x+3)$

$x = -3, 12$

6. Check for extraneous solutions

$x = -3, 12$ $\quad$ $x = 12$

3. Find the value of x to the nearest hundredth.



SOHCAHTOA

$\frac{\cos 68°}{1} = \frac{40}{x}$

$x = \frac{(40)(1)}{\cos 68°} = \frac{40}{\cos 68°}$

$x = 106.78$