

COT 3100 Quiz #1 (Version A): $d = rt$, logs (9/23/2024)

Last Name: _____ **First Name:** _____

Circle Recitation: 8:30 am

9:30 am

1) (15 pts) Ali is biking from Orlando to Daytona and leaves his house at 10:45 am, biking at a constant speed of 15 miles per hour. Samantha, realizing that Ali forgot some important papers, leaves Ali's house with the papers at 11:05 am, with the intention of catching up with Ali. She starts biking at a constant speed of 20 miles per hour traveling the exact same path that Ali started taking. At the exact point in time that Samantha left Ali's house, a bird started where Samantha started flying towards Ali at a constant speed of 40 miles per hour. The bird, when reaching Ali, turns around and starts flying towards Samantha, and continues turning back and forth until Samantha catches Ali. Answer the following questions about this scenario.

(a) How at what time does Samantha catch Ali?

(b) How many miles from Ali's house does Samantha catch Ali?

(c) How far does the bird fly from 11:05 am when it starts until Samantha catches Ali?

2) (7 pts) What is the value of x which satisfies the following equation? Please answer in the form a^b , where $1 < a < 4$ and both a and b are positive integers.

$$\log_3(\log_2 x^{27}) = 5$$

3) (8 pts) Find all solutions for x to the following equation:

$$9^{\log_3 x} - 5x = \log_2\left(\frac{1}{64}\right)$$