COT 3100 Final Exam - Part A (Recitation Topics) - 25 pts (12/8/2022)

Last Name: _____ , First Name: _____

1) (8 pts) Sam is taking a road trip in the mountains. Let r be the speed, in miles her hour, that she would have to travel to arrive at her destination on time. For the first third of the length of the trip, there was a rain storm, so Sam drove at r – 10 miles per hour. She calculated that to make it on time, she would have to drive the remaining two thirds of the length of the trip at r + 20 miles per hour. What is the value of r?

2) (4 pts) On January 1, 2022, Jessie set her clock to 2:00 PM exactly when it was 2:00 PM, but her clock runs faster than the actual time. Later that evening (same day) when her clock read 10:00 PM, the actual time was 9:36 PM. Assuming that Jessie's clock continues ticking at this rate and she doesn't change it, on what day in January (give the date) will her clock read the exact correct time of 2:00 PM, but the incorrect day, being one day ahead?

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3) (4 pts) Determine the value of x which satisfies the following equation:

$$log_4 x + log_8(4x^4) = \frac{68}{3}$$

Please express your answer in the form $x = 2^a$, for some integer a.

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4) (5 pts) Let S be an arithmetic sequence such that the sum of the first 25 terms is 638 and the sum of the next 25 terms is 3138. What is the common difference between terms in the sequence S?

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5) (4 pts) Consider taking the base 10 representation of 100! and converting it to base 8. How many 0s would be at the end of this converted value?

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Scratch Page – Please clearly mark any work on this page you would like graded.