

Quiz 4 MATH 115 Summer 2020 To receive credit, **SHOW ALL WORK.**

1. 4 pts. Solve. Find exact answers. $\log_6 (x+5) + \log_6 (x) = 2$

2. 3 pts. Solve. Find exact answers. $(8)^{x/3} = \frac{1}{16^{x-1}}$

3 pts. 3. Determine which of the functions listed below (select all that apply) satisfy **both** of these conditions:

- i. The graph of the function is asymptotic to the y axis; **and**
- ii. As x approaches ∞ , $f(x)$ approaches ∞ .

- A. $f(x) = 2\log x$
- B. $f(x) = (\frac{1}{2})^x$
- C. $f(x) = \frac{1}{2}(e^x)$
- D. $f(x) = 2^{x+1}$
- E. $f(x) = -2\ln(x)$

4.7 pts. On June 1, 2020 there are 200 cases of a newly detected virus. On June 5, 2020 there are 350 total cases of the virus.

2 pts. A. Assuming an exponential growth model $N(t) = N_0 e^{kt}$ for the growing number of total cases each day, find the growth constant k . Round your answer for k to 4 decimal places. Let $t=0$ days represent June 1, 2020.

1 pt. B. Find the exponential growth function $N(t)$ which gives the total number of cases after t days. Make sure you plug in all the constants you have for the function, such as N_0 and k .

2 pts. C. If the total number of cases of this virus grows according to this exponential growth model, when will there be 500,000 total cases?

2 pts. D. How many total cases does this model predict that there will be on July 1, 2020? (Round your answer to the nearest case.)

5. 5 pts. You have \$12,000 to invest.

3 pts. A. How long would it take to reach \$20,000 at 7% interest, **compounded monthly**?

2 pts. B. How long would it take to reach \$20,000 at 6½% interest, **compounded continuously**?

Only round off final answers, and round them to three decimal places.

6. 4 pts. For the angle: $-36\pi/5$

A. What quadrant does the angle $-36\pi/5$ fall in?

B. Find two angles coterminal to $-36\pi/5$, measured in **radians**, one positive and one negative. Find exact answers.

C. Convert the angle $-36\pi/5$ to degrees. Find an exact answer.

7. 4 pts. A Ferris wheel with a diameter of 52 feet is rotating at 2 revolutions per minute. What is the linear speed of the edge of the Ferris wheel in miles per hour? Round your final answer to the nearest hundredth.