Instructions

- **Complete the problems as if this were an actual test.**
  - **70-80 minutes of uninterrupted time.** (this means no phones, Netflix, snapchat, etc….I promise you will survive😊)
  - **Don't use your calculator on the NonCalc problems**
  - **No help from notes, friends, google, etc.**
- **After you have completed the problems, grade your test using the key provided.**
- **Try extra problems similar to the ones you missed until you feel like you understand those concepts.**

Practice Test / Unit 6 **Secondary 3 Honors**

Non-Calculator

Simplify. Round any decimal answers to 3 decimal places.

1. $\ln e^{5x+1}$

2. $6^{\log_6 23}$

3. $\log_8 8^{x^5+4}$

4. $e^{\ln(x+3)}$

5. $\frac{6x^{-3}y^4}{(3xy^2)^{-2}}$

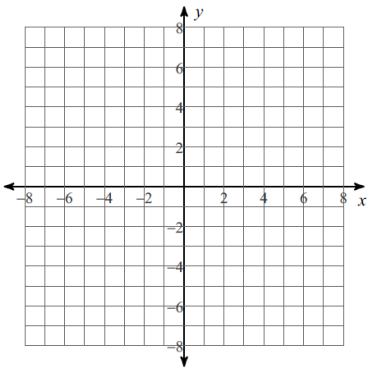
6. $\log_4 64$

7. Condense the following. $2\log x - 3\log y + \log z$

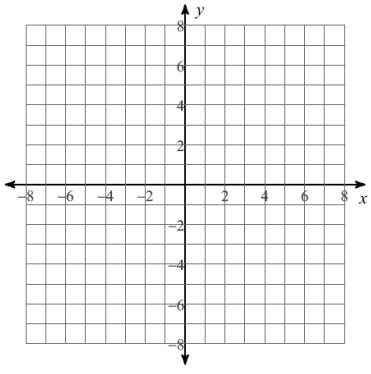
8. Expand. $\log_3\left(3x^2\sqrt{y}\right)$

Graph. Make sure to show two points and the asymptote.

9. $f(x) = -e^{x+2} - 1$



10. $f(x) = \log_3(-x) + 5$



11. If $\log_x 5 = 0.898$ and $\log_x 9 = 1.226$, find $\log_x \left(\frac{5}{3}\right)$.

CALCULATOR.

Solve. Round any decimal answers to 3 decimal places.

12. $6e^{3x} + 2 = 6$

13. $2(6)^{5x} - 3 = 10$

14. $5^{x^2} \cdot 5^{-x} \cdot 5^{-4} = 25$

15. $x^{\frac{3}{4}} = 8$

16. $\ln(x) - \ln(2) = 8$

17. $\log(2x + 3) + \log(3) = \log(7)$

18. Determine the amount of time for an investment to triple if the investment is compounded continuously at 3%. Round to 2 decimal places.

19. The half-life of radioactive technetium is 213,000 years.

a. Use the formula $y = Ce^{kt}$ to solve for k. Round to **8 decimal places**.

b. If you begin with 30 grams of radioactive technetium, write the specific equation for the model.

c. using your equation from (b), how much will remain after 75,000 years?

20. Find $\lim_{x\to\infty} \frac{300}{1+2e^{-0.36t}}$