Exponential and Logarithmic Function and Equation Review Precalculus

1. Horizontal asymptote: $f(x) = 3^{x-5} - 9$

2. Domain, in interval notation: $f(x) = 4^{x+2} + 3$

3. Vertical asymptote: $f(x) = \log_5(x+3) - 7$

4. Range, in interval notation: $f(x) = 4^{x+2} + 3$

5. Identify all transformations from parent function: $f(x) = 15\left(\frac{7}{8}\right)^{x+5} - 11$

6. Identify all transformations from parent function: $f(x) = \log_5(x+3) - 7$

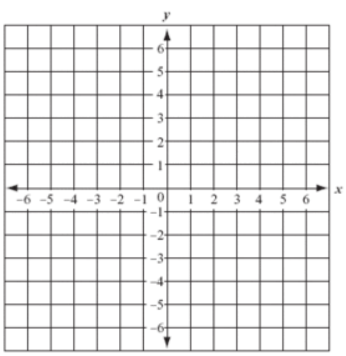
7. Solve equation for value of variable: $\log_6(5x+1) = 3$

8. Solve equation for value of variable: $\log_m 32{,}768 = \frac{5}{2}$

9. Simplify: $e^{ln10x-1}$

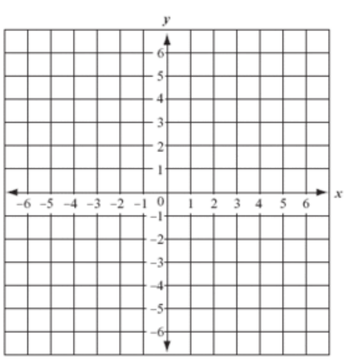
10. Evaluate: $\log_4 \frac{1}{64}$

11. Sketch graph of logarithmic function: $f(x) = \log_3(x+1) - 4$



x	y

12. Sketch graph of exponential function: $f(x) = 2^{x-3} + 1$



x	y

13. Identify y-intercept, as an ordered pair: $f(x) = 9\left(\frac{1}{3}\right)^{x+2} - 7$

14. Solve using logarithmic properties: $\log_2 114 - \log_z x = \log_2 3$

15. Solve using logarithmic properties: $4\log_5 x = \log_5 81$

16. Condense the logarithmic expression: $8\log_9 2 + 3\log_9 x - \frac{1}{2}\log_9 y$

17. Expand the logarithmic expression: $\log_2 \frac{x^5 y}{f^2}$

18. Find the inverse function: $f(x) = 7^{x-4} + 8$

19. Find the inverse function: $f(x) = \log_3(x-4) + 11$

20. Identify the interval on which the function is increasing or decreasing: $f(x) = 2^{x+1} - 5$

21. Identify the end behavior of the function: $f(x) = 2^{x+1} - 5$

22. In January 1990, there were 5.5 billion people living on this planet. The population has been growing at a rate of 1.9% per year. In which year will the population reach 9 billion?

23. You deposit $3000 in an account that pays 4.25% interest compounded daily. How much money will you have in the account after 100 months?

How much would be in the account if it was compounded continuously?

How long does it take your money to quadruple if you compound continuously?

24. The spread of a flu virus through a certain population is modeled by $y = \frac{1000}{1+990e^{-0.7t}}$

Where y is the total number infected after t days. In how many days will 901 people be infected with the virus?

25. The population of the rare Tookie-Tookie bird is modeled by the equation $P(t) = P_o e^{0.085t}$, where $P(t)$ is the population after t years and P_o is the initial population.

If 32 of these rare birds are dropped off and confined on a remote island (they cannot fly or swim..they cannot leave the island),

A. How long will it take the population to triple?

B. What will the population be after 15 years?