

Final Exam Sample Short Answer Questions

Section 6.2

1. List the transformations that can be applied to the function $f(x) = e^x$ to get the graph $g(x) = e^{-x} - 3$. State the domain, range, and any asymptotes of $g(x)$.

Section 6.3

2. Find the domain of the function $f(x) = \log_a(x - 25)$.

Section 6.4

3. List the transformations that can be applied to the function $f(x) = \log_3(x)$ to get the graph $g(x) = \log_3(x - 3) + 4$. State the domain, range, and any asymptotes of $g(x)$.

Section 6.5

4. Rewrite the expression

$$6 \log(49 - x^2) - (\log(7 + x) + 2 \log(7 - x))$$

as a single logarithm, if possible.

5. Use the laws of logarithms to rewrite the expression $\ln\left(\frac{x^{19}\sqrt{x-1}}{3x-6}\right)$ in a form with no logarithm of a product, quotient, or power.

Section 6.6

6. Solve the equation $\log(x^6) = (\log x)^2$ for x .

Section 6.7

7. The half-life of strontium-90 is 28 years. Suppose we have a 48 mg sample.
 - a. Find a function that models the mass $m(t)$ remaining after t years.
 - b. How much sample will remain after 70 years?
 - c. How long will it take the sample to decay to a mass of 12 mg?

Section 7.1

8. Solve the following system of equations using any method.

$$\begin{cases} -4x - 2y = -4 \\ -2x - 5y = -18 \end{cases}$$

9. A department store sold 35 shirts one day. All short-sleeved shirts cost \$9.00 each and all long-sleeved shirts cost \$17.00 each. Total receipts for the day were \$435.00. Set up a system of equations that models this scenario and solve it to find how many of each kind of shirt were sold.