Evaluate the given function. Round to the nearest thousandth.

1. $f(x) = e^{x-4} - 10$, $f(6)$
2. $f(x) = \ln(x+7) + 4$, $f(11)$

Simplify.

3. $\log_{12} 144$
4. $\ln e^{-3}$

Convert to logarithmic form.
Convert to exponential form.

5. $7^x = 343$
6. $\ln(x+8) = 2$

Condense. Simplify if possible.

7. $\log_4 3136 - \log_4 49$
8. $2\log_b x + 5\log_b y - 3\log_b z$

Expand. Simplify, if possible.

9. $\log_3 729a^{12}$
10. $\ln\left(\dfrac{a^4 b^6}{c^8 d}\right)$

Evaluate using the change of base formula. Round to the nearest thousandth.

11. $\log_9 62$

Solve. Round to the nearest thousandth.

12. $6^{x+4} = \dfrac{1}{36}$
13. $4^{x-9} = 76$
14. $e^{x+2} = 496$

Solve. Round to the nearest thousandth.

15. $\log_3(2x-11) = \log_3 5$
16. $\log_5(x+65) + 5 = 8$
17. $\log_2 x + \log_2(x-4) = 5$

For the given function $f(x)$, find its inverse function $f^{-1}(x)$.

18. $f(x) = e^{x+9} - 17$
19. $f(x) = \ln(x+8)$

20. Sonia started a bank account with an initial deposit of $4200. The bank account pays 6% interest, compounded monthly. How long will it take for the deposit to grow to $6000?

21. A painting that was purchased for $15,000 in 1992 was valued at $25,000 in 2002. If the value of the painting keeps rising exponentially at the same rate, how much will it be worth in 2025?

22. During the 1990's, the percentage of American adults that were obese increased exponentially. For any particular year, the percentage of adult Americans who were overweight can be approximated by the function $f(x) = 11.5 \cdot 1.057^x$, where x represents the number of years after 1990. Use this function to predict when the percentage of Americans that will be obese reaches 30%. (*Source: CDC*)

23. The body temperature of a person who was found dead in an apartment that maintained a constant temperature of $75°F$ can be approximated by the function $f(t) = 75 + 12e^{-0.206t}$ where $t = 0$ corresponds to the time that the body was found. What will the body's temperature be 6 hours after it was found?

Graph. Label any intercepts and asymptotes. State the domain and range of the function.

24. $f(x) = 2^{x+1} - 9$
25. $f(x) = e^{x-2} + 4$
26. $f(x) = \log_3(x-5) + 3$
27. $f(x) = \ln(x+2) - 2$