9 Chapter 9 Test, Form 2A *(continued)*

11. Use $\log_5 2 \approx 0.4307$ and $\log_5 3 \approx 0.6826$ to approximate the value of $\log_5 54$.

    A. 0.1370   **B.** 2.4785   **C.** 0.8820   **D.** 0.7488   **11.** _____

12. Solve $\log_4 (m - 3) + \log_4 (m + 3) = 2$.

    F. $\sqrt{11}$ **G.** 5   **H.** 1   **J.** -5.5 **12.** _____

13. Solve $6^{3n} = 43^{5n - 4}$. Round to four decimal places.

    A. 1.1202   **B.** -1.9005 **C.** -0.2800 **D.** 2.1418   **13.** _____

14. Solve $5^{2x + 1} \geq 50$. Round to four decimal places.

    F. $x \geq 4.5000$ **G.** $x \geq 0.7153$ **H.** $x \geq 0$ **J.** $x \geq 2.4307$ **14.** _____

15. Use common logarithms to approximate $\log_9 207$ to four decimal places.

    A. 0.4120   **B.** 1.3617   **C.** 3.2702   **D.** 2.4270   **15.** _____

16. Suppose you deposit $1000 in an account paying 3% annual interest, compounded continuously. Use $A = Pe^{rt}$ to find the balance after 10 years.

    F. $20,085.54   **G.** $1300   **H.** $1349.86   **J.** $1068.65   **16.** _____

17. Solve $4 + 3e^{5x} = 27$.

    A. 0.4074   **B.** 0.4394   **C.** 2.0369   **D.** 0.1769   **17.** _____

18. Solve $\ln (x + 5) \geq 2$.

    F. $x \geq 2.3891$ **G.** $x \leq 2.3891$ **H.** $x \geq 12.3891$ **J.** $x \leq 12.3891$ **18.** _____

19. **CHEMISTRY** A particular compound decays according to the equation $y = ae^{-0.0974t}$, where t is in days. Find the half-life of this compound.

    A. about 5.1 days   **C.** about 7.1 days

    B. about 7.4 days   **D.** about 9.7 days   **19.** _____

20. **TOURISM** At a town with a large convention center, the cost of a hotel room has increased 5.1% annually. If the average hotel room cost $48.00 in 1980 and this growth continues, what will an average hotel room cost in 2012? Use $y = a(1 + r)^t$ and round to the nearest cent.

    F. $143.38   **G.** $235.79   **H.** $126.34   **J.** $87.19   **20.** _____

Bonus Solve $5^{\log_5 2x - \log_5 (x - 3)} = \ln e^{x + 4}$.   **B:** _____