

Name _____ Period _____

Sections 6-5 - 6-7 Review

Solve the equation. Round your answers to the nearest hundredth.

1. $6^x = 41$ [A] 2.07 [B] 1.61 [C] 0.78 [D] 0.48

[1] _____

2. $9^{x+2} = 23$ [A] -1.3 [B] -1.05 [C] -0.57 [D] -0.64

[2] _____

3. $3 + 157^x = 17$

[3] _____

Evaluate the logarithmic expression to the nearest thousandth.

4. $\log_3 \frac{2}{3}$

[4] _____

5. $\log_8 423$

[5] _____

Evaluate the expression to the nearest thousandth. If the expression is undefined, write *undefined*.

6. $\ln 86$ [A] 3.044 [B] 4.454 [C] 3.344 [D] 1.934

[6] _____

7. $2e^{\frac{1}{2}}$ [A] 2.718 [B] 3.297 [C] 3.29 [D] 3.844

[7] _____

8. $\ln \sqrt[5]{e}$

[8] _____

9. $3e^{\frac{1}{4}}$

[9] _____

10. The half-life of carbon-14 is 5700 years. Find the age to the nearest year of a sample in which 17% of the radioactive nuclei originally present have decayed.

[A] 1082 years [B] 532 years [C] 1632 years [D] 1532 years

[10] _____

11. If \$9500 is invested at an interest rate of 7%, compounded continuously, determine the balance in the account after 3 years. Use the formula $A = Pe^{rt}$.

[A] \$11,719.94 [B] \$12,569.73 [C] \$70,196.03 [D] \$11,637.91

[11] _____

12. The half-life of carbon-14 is 5700 years. Find the percentage of the original carbon-14 nuclei that remains in a sample after 2366 years have passed.

[12] _____

13. If \$10,800 is invested at an interest rate of 9%, compounded continuously, determine the balance in the account after 4 years. Use the formula $A = Pe^{rt}$.

[13] _____

14. Solve the equation $2^{4x} = 8^{x+1}$. [A] 5 [B] $\frac{1}{4}$ [C] $\frac{1}{3}$ [D] 3

[14] _____

Solve the equation for x . Write the exact solution and the approximate solution to the nearest hundredth, when appropriate.

15. $\ln(6x+8) = 9$

[A] $\frac{e^9 - 8}{6} \approx 1349.18$

[B] $\frac{e^8 + 6}{9} \approx 331.88$

[C] $\frac{e^9 + 8}{6} \approx 1351.85$

[D] $\frac{e^8 - 6}{9} \approx 330.55$

[15] _____

16. $125^{7x+5} = 25$

[16] _____

Solve the equation for x . Write the exact solution and the approximate solution to the nearest hundredth, when appropriate.

17. $\ln e^{5x} = 5$

[17] _____

18. $\ln x^5 = 25$

[18] _____

19. The magnitude of an earthquake is found by the equation $M = \frac{2}{3} \log \frac{E}{10^{11.8}}$, where M is the magnitude and E is the energy released. Find the magnitude of an earthquake that released $10^{24.7}$ ergs of energy.

[A] 7.6

[B] 12.9

[C] 8.9

[D] 8.6

[19] _____

20. The formula for estimating the number, N , of a certain product sold is $N = 3300 \ln(2t + 9)$, where t is the number of years after the product is introduced. What is the expected number of sales 4 years after the product is introduced? Round to the nearest whole number.

[A] 9350

[B] 9159

[C] 6881

[D] 6871

[20] _____