

9.3 Corrective Assignment – The Number e

Algebra 2

Name: _____ ID: 1

Date: _____ Period: _____

For 1-8, simplify. Your answer should contain only positive exponents

1. $e^{-2} \cdot e^4$

2. $-\frac{e^{-x}}{3e}$

3. $\frac{7e^{3x}}{e^{x-1}}$

4. $(3e^{-3x})^{2x}$

5. $-4e^{2x} \cdot e^{-5}$

6. $\frac{e^{5x+2}}{e^{3x+3}}$

7. $\frac{e^{x^2-7x-3}}{e^{5-2x}}$

8. $(2e^{3x-4})^{3x}$

For 9-12, tell whether the function is an example of exponential growth or exponential decay.

9. $y = \frac{1}{4}(e)^{0.6x}$

10. $y = -4(e)^{2x}$

11. $y = -3\left(\frac{1}{e}\right)^{-x}$

12. $y = 2(e)^{-5x}$

For 13 – 16, write a model for each scenario and use the model to calculate the value for the given number of years. (Not all problems involve compounding interest!)

13. You deposit \$7,000 in an account that pays 6% annual interest compounded continuously. How much will you have after 10 years?

14. Your recent purchase of baseball memorabilia is worth \$102, but increases by 3.3% every year. How much will it be worth after 20 years?

15. You deposit \$500 in an account that pays 8% annual interest compounded monthly. How much will you have after 15 years?

16. You deposit \$575 in an account that pays 4% annual interest compounded continuously. How much will you have after 5 years?

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ANSWER KEY

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1) e^2

2) $-\frac{1}{3e^{x+1}}$ or $-\frac{e^{-x-1}}{3}$

3) $7e^{2x+1}$

4) $\frac{9^x}{e^{6x^2}}$

5) $-4e^{2x-5}$

6) e^{2x-1}

7) e^{x^2-5x-8}

8) $8^x e^{9x^2-12x}$

9) Growth

10) Growth

11) Growth

12) Decay

13) $A(t) = 7000e^{0.06t}$
 $A(10) = \$12,754.83$

14) $V(t) = 102(1.033)^t$
 $V(20) = \$195.26$

15) $A(t) = 500 \left(1 + \frac{.08}{12}\right)^{12t}$
 $A(15) = \$1,653.46$

16) $A(t) = 575e^{0.04t}$
 $A(5) = \$702.31$