Algebra 2

6-Review

Take this test as you would take a test in class. When you are finished, check your work against the answers.

6-01

Simplify

1. $\frac{e^2}{2e^3e^{-2}}$
2. $3e^2 - 7e^2$
3. $2\left(\frac{3}{4}\right)^3$

6-02

4. Determine whether $f(x) = 2\left(\frac{1}{2}\right)^{x-1} + 4$ is exponential growth or exponential decay.

6-02

Solve the word problems. Round to two decimal places.

5. You charge $1200 on a credit card that charges 20% interest compound daily. If you do not make a payment, how much will you owe after 1 year?
6. A rabbit population starts with 20 individuals. If the population increases 30% every year, estimate the number of rabbits in the population after 5 years.

6-03

7. Rewrite $10^2 = 100$ as a logarithm.

Evaluate.

8. $\log_4 256$
9. $\log_2 \frac{1}{1024}$

6-04

Condense the expression.

10. $\ln 12 + 3\ln x - \ln x^2$

Expand the logarithm.

11. $\ln \frac{2x^7}{y^2}$

Use the change-of-base formula to evaluate the logarithm. (Round to three decimal places.)

12. $\log_4 150$
13. $\log_{17} 1321$

6-05

Describe the transformations from *f*(*x*) to *g*(*x*).

14. $f(x) = 2^x; g(x) = -2^x - 1$
15. $f(x) = \ln x\,; g(x) = 2\ln(-x) - 3$
16. Write a function that is the transformation of $f(x) = \log_2 x$ with a vertical stretch by a factor of 3 and a translation 4 left.

6-05

Graph and state the domain and range.

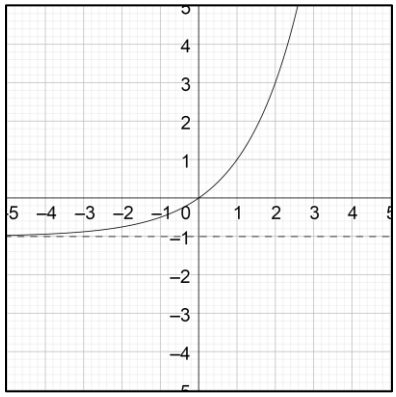
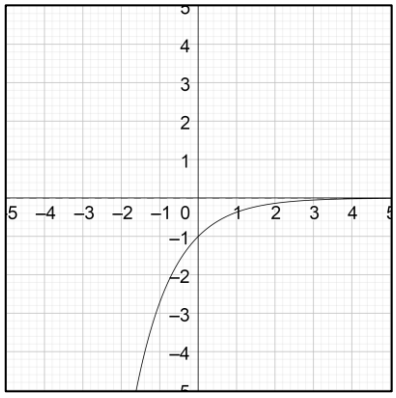
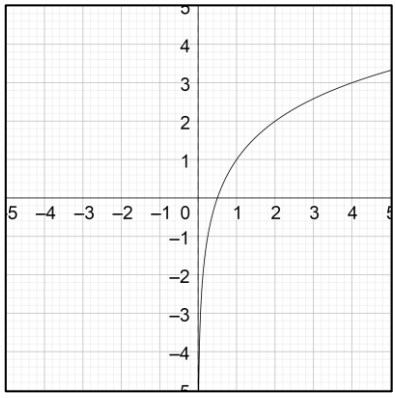
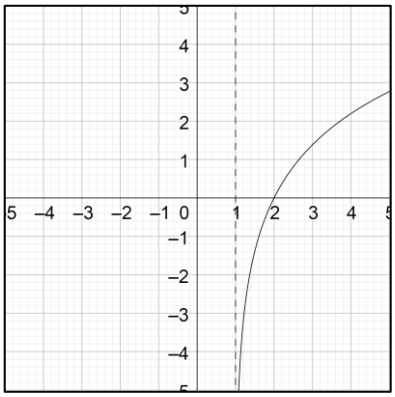
17. $y = 2^x - 1$
18. $y = -e^{-x}$
19. $y = \log_2 x + 1$
20. $y = 2\ln(x - 1)$

6-06

Solve. (Round to three decimal places.)

21. $4^{2x+1} = 32^{x-1}$
22. $7^{x+4} + 3 = 51$
23. $\log_{21}(2x + 17) = \log_{21}(x - 1)$
24. $\log_5(2x + 7) = 15$

Answers

1. $\frac{e}{2}$
2. $-4e^2$
3. $\frac{27}{32}$
4. Exponential decay
5. \$1465.60
6. 74 rabbits
7. $\log_{10} 100 = 2$
8. 4
9. -10
10. $\ln(12x)$
11. $\ln 2 + 7\ln x - 2\ln y$
12. 3.614
13. 2.536
14. Reflection over the x-axis, translation 1 down
15. Vertical stretch by factor of 2, reflection over y-axis, translation 3 down
16. $g(x) = 3\log_2(x+4)$
17. 
18. 
19. 
20. 
21. 7
22. -2.011
23. No solution (-18 is extraneous)
24. 1.526×10^{10}