Unit 2 (1.11)   **Logs/Exponential Quiz Review**

Write in exponential form.

1. $log_4 x = \frac{1}{2}$ 2. $ln7.39 \approx 2$

Write in logarithmic form.

3. $e^4 \approx 54.6$ 4. $9^3 = 729$

Solve using log properties or solving exponent rules.

5. $81^x = 729^{x-2}$ 6. $\left(\frac{1}{343}\right) = 49^{x+3}$ 7. $9^x = 31.2$

8. $4e^{3x} - 11 = 5$ 9. $8log_5 2 = log_5 64x$ 10. $log_2 4x - log_2 5 = 4$

11. $\ln 14 + \ln x = 3$

12. $8^{7x} = 2$

13. $\log_7 4 + 2\log_7 x = \log_7 196$

14. $4^{x+6} = 14^{8x}$

15. $\ln(2x - 1) = 5$

16. $\ln(x - 2) - \ln 4 = \ln 3$

17. $4^{x-5} = 77$

18. $e^{2x-7} + 4 = 9$

19. $\log_6 3x = 2$

20. $2^{5-x} = 9^{x+1}$

Identify as exponential growth or decay and then make a rough sketch of the graph.
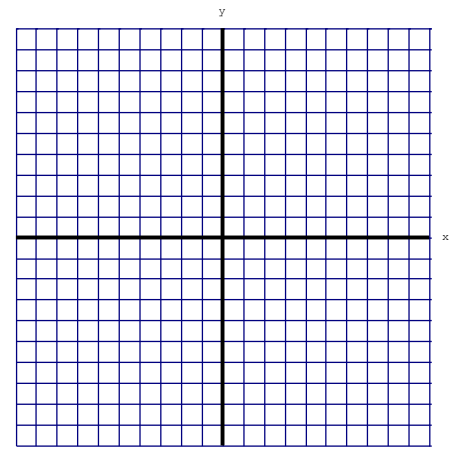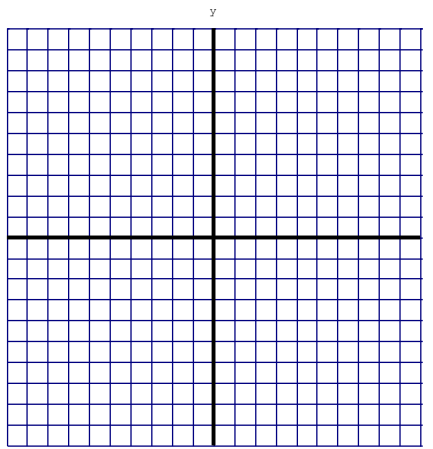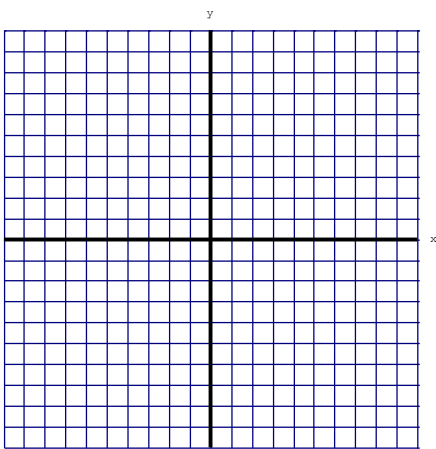
21. $y = 2\left(\frac{1}{4}\right)^x$

Growth or Decay?

22. $y = \frac{1}{2}(6)^x$

Growth or Decay?

23. $y = \frac{5}{2}\left(\frac{2}{5}\right)^x$

Growth or Decay?

Formulas:

$y = a(1 \pm r)^t$

Exponential Growth or Decay

$y = Pe^{rt}$

Compound Continuously

$y = P\left(1 + \frac{r}{n}\right)^{nt}$

Compound any other way

24. You buy a new car for $22,500. The value of the car decreases by 25% each year.

a. What is the value of the car after three years?

b. In approximately how many years is the car worth $5300?

Formulas:

$y = a(1 \pm r)^t$	$y = Pe^{rt}$	$y = P\left(1 + \frac{r}{n}\right)^{nt}$
Exponential Growth or Decay	Compound Continuously	Compound any other way

25. Gasoline costs $2.15 per gallon. The price per gallon increases an average of 4.5% per year.

    a. What would be the approximate price after 2 years?

    b. If this trend continues, how many years before gas prices reach $3 per gallon?

26. You deposited $4600 in an account that earns 2.6% annual interest. Find the balance after 5 years if the interest is compounded:

    a. continuously

    b. quarterly

    c. Approximate the number of years it would take for your balance to reach $6800 if the account is compounded continuously.

    d. Approximate the number of years it would take for your balance to double if the account is compounded every 6 months.