

Name: AK Period: _____ Date: _____

5.1 – 5.2 Review

Check your answers as you go by using your graphing calculator.

On a separate piece of graph paper, sketch a graph of each function including at least three points, find the domain, range, equation of the asymptote, end behavior and list the transformations. (Non Calculator)

1. $f(x) = 2^{2x-1} + 3$

4. $p(x) = (1/2)\log(x-3) + 1$

2. $g(x) = (1/3)^{2-x} - 2$

5. $q(x) = \log_2(3-x) - 2$

3. $h(x) = 5 - (1/2)^{-x+2}$

6. $r(x) = 1 - \log_5(2x+3)$

Evaluate the given expression. (Non Calculator)

7. $\log(1/100)$

8. $10^{\log(23)}$

8. $\ln(e)$

9. $\log_{32}(1/8)$

10. $\log_{4/9}(27/8)$

11. $\log_{36}(1/216)$

12. $5^{\log_5(x)}$

$5^{\log_5 x} = x \leftrightarrow \log_5(x) = \log_5(5^{\log_5 x})$

13. $\ln(e^{1/2})$

14. $49^{\log_7(100)}$

$(7^2)^{\log_7 100} = (7^{\log_7 100})^2 = 100^2$

15. $(1/27)^{\log_3(4)}$

16. $\log_2(8^3)$

17. $16^{\log_{1/2}(3)}$

18. $\log_9(1/81)$

19. $\log_{25/64}(512/125)$

20. $\log_{49}(343)$

21. $\log_{1/2}(1/32)$

Check
on
Calc

You may use a calculator for the rest of the problems.

22. Find the amount of money in an account if you invested 7000 dollars into a CD that compounded monthly at a rate of 4.25% over 6 years?

$A = P(1 + \frac{r}{n})^{nt}$ $A = 7000(1 + \frac{0.0425}{12})^{12 \cdot 6} = \$9,029.16$

23. What is the population of a colony of rabbits that grow continuously for 10 years at a rate of 12.5 % if the colony started with 120 rabbits?

$A = Pe^{rt}$ $A = 120e^{0.125(10)} \approx 418 \text{ rabbits}$

24. What is the minimum rate (to the nearest tenth of a percent) of a savings account that compounds monthly in order to double your money in 25 years?

$$\frac{2x}{x} = x \left(1 + \frac{r}{12}\right)^{12(25)}$$

$$2 = \left(1 + \frac{r}{12}\right)^{300}$$

$$\sqrt[300]{2} = 1 + \frac{r}{12} = 1.002313$$

$$\frac{r}{12} = 0.002313 \cdot 12$$

$$r = 0.02775$$

$$r = 2.775\%$$

25. If you want your ant farm to have 100 ants in 6 months, what is the minimum number of ants you should start with if their population grows continuously at a rate of 22.5%?

$$100 = P e^{.225(\frac{1}{2})}$$

$$e^{.225(\frac{1}{2})} e^{.225(\frac{1}{2})}$$

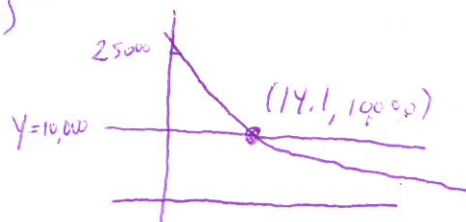
$$89.3 = P$$

$$P = 90$$

26. You bought a car for \$24000. The value of this model care typically decreases by 6% per year. When will the value of the car drop below \$10000?

$$10000 > 24000 (1 - .06)^t$$

Graph on calc.



After about 14 years.

27. An isotope of cesium-137 has a half-life of 30 years. If 1.0g of cesium-137 disintegrates over a period of 20 years, how many grams of cesium-137 would remain?

$$y = 1 \left(\frac{1}{2}\right)^{t/30}$$

$t \rightarrow \text{years}$

$$y = 1 \left(\frac{1}{2}\right)^{20/30}$$

$$= .63 \text{ grams}$$

28. Selenium-83 has a half-life of 25 minutes. How many minutes would it take for a 10.0 mg sample to decay and have only 3.3 mg of it remain?

$$3.3 = 10 \left(\frac{1}{2}\right)^{t/25}$$

Graph

$t \rightarrow \text{min}$

40 min

