

PAP Algebra
Chapter 12 Test Review

Name: _____

Solving Exponential/Log Equations (Common Base or by Converting)

1) $2^x = 16$

5) $\left(\frac{1}{3}\right)^x = 27$

2) $4^{3x} = \left(\frac{1}{8}\right)^{2x+1}$

6) $\log_2(x^2 + 3x - 10) = 3$

3) $3(e)^x + 3 = 9$

7) $3\ln(x + 5) = 21$

4) $4(e)^{x+5} - 8 = 12$

8) $2\log_7(4) - \log_7 x = \frac{2}{3}\log_7 8$

9) $14 + \log_7(x) = 16$

12) $\log_3(x + 8) - \log_3(x - 4) = 2$

10) $\log_6(3x) - 10 = -8$

13) $\log_4(4x) = 3 - \log_4(2x)$

11) $\ln(x) = 13 - \ln(x^2)$

14) $2\log_3(x) - \log_3(2) = 3\log_3(4)$

Word Problems (Setting Up & Solving)

- 15)** Is it better to invest your money at 5.5% interest compounded continuously or at 5.8% interest compounded monthly if you have \$12,000 to invest for 4 years?

- 16)** \$12,000 principal earning 4.8% interest after 4 years
a.) Annually b.) Semi-annually c.) Quarterly d.) Monthly
- 17)** If you have an account that has an interest rate of 1.9% compounded monthly, how long will it take for your money to triple?
- 18)** Mosquitoes are tripling in number each week. If there are currently 300 mosquitoes in your bug zapper in the back yard, when will there be 2000 mosquitoes?
- 19)** As a town gets smaller, the population of its high school decreases by 12% each year. The student body has 538 students now. In how many years will it have 390 students?
- 20)** The world population in 2000 was approx. 6.08 billion. The annual rate of increase was about 1.26%. If the world population continues to grow at this rate, when will the population reach 9 billion?

- 21)** Nobelium-259 has a half-life of 58 minutes. How much remains of a 1 kg sample after 1 day?
- 22)** Dubnium-262 has a half-life of 34 seconds. How many grams did we begin with if, after 5 minutes, we are left with only 1 gram?
- 23)** Your parents bought a boat for \$60,000. The boat will depreciate by 9.3% each year. When will the boat be worth \$10,000?
- 24)** If a population of 175 red-spotted toads doubles every 2 years, how many toads can you expect to find in 10 years?
- 25)** A student wants to have \$8000 for college 5 years from now. How much should she put into an account that earns 5.2% annual interest compounded continuously?