

Algebra 2B
Practice Quiz on 7-5 & 7-6

Name: _____

Date: _____ Hr: _____

SHOW ALL WORK

For #1-2, solve each exponential equation by rewriting each side with a common base.

1. $4^{3x} = 64$

1. _____

2. $2^{3x} = 4^{x+1}$

2. _____

For #3-4, solve each exponential equation by taking the logarithm of each side. Round to the nearest hundredth.

3. $2^x = 3$

3. _____

4. $25^{2x+1} = 144$

4. _____

For #5-6, solve each exponential equation by graphing. Round to the nearest hundredth.

5. $6^{2x} = 10$

5. _____

6. $2^{x+3} = 512$

6. _____

For #7-9, solve each logarithmic equation by using properties of logarithms and by converting to exponential form.

7. $\log(5 - 2x) = 0$

7. _____

8. $3\log x = 1.5$

8. _____

9. $\log 2x + \log x = 11$

9. _____

10. In 2007, the population of Tallahassee, Florida was 168,979. Some researchers believe that the population of Tallahassee will increase at a rate of 1% each year. If the researchers are correct, how many years will it take for the population of Tallahassee to reach 180,000?

10. _____

For #11-12, write each expression as a single natural logarithm.

11. $\ln 24 - \ln 6$

11. _____

12. $\frac{1}{3}(\ln x + \ln y) - 4 \ln z$

12. _____

For #13-14, solve each natural logarithmic equation by rewriting it in exponential form.

13. $1.1 + \ln x^2 = 6$

13. _____

14. $\ln(2m + 3) = 8$

14. _____

For #15-16, solve each exponential equation by rewriting it in logarithmic form.

15. $e^{x+1} = 30$

15. _____

16. $7 - 2e^{\frac{x}{2}} = 1$

16. _____

For #17, use $v = -0.0098t + c \ln R$ where v is the maximum velocity of the rocket, t is the firing time, c is the velocity of the exhaust, and R is the ratio of the mass of the rocket filled with fuel to the mass of the rocket without fuel.

17. A rocket has a mass ratio of 24. The rocket's exhaust has a velocity of 2.4 km/s. The rocket's firing time is 32 seconds. Approximately what is the rocket's maximum velocity? Round to the nearest tenth.

17. _____