MATH 70 TEST 4 Practice **Name:** _____

SECTIONS 6.7, 8.1-8.3, 10.1-10.6 of Bittinger **SPRING 2013**

Directions for the test will be: No calculators may be used. Be sure to ***show ALL of your work***. Depending on the problem, you may receive **NO CREDIT** if no work is shown even if the answer is correct. Don't take that chance. If your answer is a fraction, reduce it to lowest terms. If there is a blank, write your answer in the blank, otherwise **circle your answer**. **Keep this test** to study from for the final exam. You may use scratch paper, but if you do you must copy all work over on to this test paper. Scratch paper will not be graded.

Simplify each radical completely by factoring and 'reducing.' Assume all variables have positive values.

1. $\sqrt{98}$

2. $\sqrt{x^2+6x+9}$

3. $\sqrt{75x^2y^{25}}$

4. $\sqrt[3]{56}$

5. $\sqrt[4]{48x^22}$

6. $\sqrt[5]{x^2y^{25}z^{53}}$

Rewrite each each expression. If it is a radical expression, rewrite it as an expression with rational exponents; if it is an expression with rational exponents, rewrite it as an expression with radicals. Answers should be simplified completely.

7. $\sqrt[7]{x^4}$

8. $\sqrt[3]{\sqrt[8]{5}}$

9. $\sqrt[12]{a^3}$

10. $x^{\frac{1}{2}}$

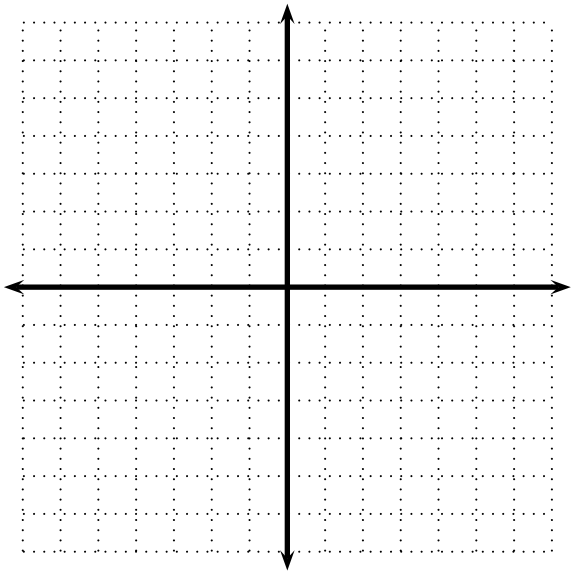
11. $\left(\frac{1}{8}\right)^{-\frac{4}{3}}$

12. $\left(125x^5\right)^{\frac{2}{3}}$

Solve the system by graphing.

13.

$$\begin{aligned} 2x + y &= 6 \\ 3x + 4y &= 4 \end{aligned}$$



Solve the systems by the method of your choice. Then select the correct labels for the system.

14.

$$\begin{aligned} 2x - 3 &= y \\ y - 2x &= 1 \end{aligned}$$

The solution(s) if any is _____

Circle the label(s) that describe the system:

consistent inconsistent depdendent independent

15.

$$\begin{aligned} x - 2y &= 16 \\ y + 3 &= 3x \end{aligned}$$

The solution(s) if any is _____

Circle the label(s) that describe the system:

consistent inconsistent depdendent independent

Simplify expressions by rationalizing denominators. Assume all variables represent positive numbers.

16. $\dfrac{\sqrt{x}}{\sqrt{x}-\sqrt{y}}$

17. $\sqrt{\dfrac{2}{7}}$

18. $\dfrac{1}{\sqrt[3]{4}}$

19. $\sqrt{\dfrac{10ab^2}{72a^3b}}$

20. $\dfrac{\sqrt[4]{7}}{\sqrt[4]{2}}$

21. $\dfrac{1+\sqrt{2}}{3+\sqrt{5}}$

Perform the operations on the radical expressions. Simplify your answer as far as possible. Assum that all variables have positive values.

22. $\sqrt[3]{2x}\left(\sqrt[3]{4x}-\sqrt[3]{5x^7}\right)$

23. $\left(\sqrt{15}-\sqrt{10}\right)\left(\sqrt{15}+\sqrt{10}\right)$

24. $\left(5+\sqrt{2x}\right)^2$

Solve the radical equations.

25. $\sqrt{x-2}-7=-4$

26. $\sqrt[3]{x-2}=3$

27. $x=\sqrt{x-1}+3$

28. $\sqrt{6x+7}-\sqrt{3x+3}=1$

Solve the application problems.

29. The Big Muddy River has a current of 3 miles per hour. A motorboat takes the same amount of time to go 12 miles downstream as it takes to go 8 miles upstream. What is the speed of the boat in still water?

30. A man can plant his garden in 5 hours working alone. His daughter can do the same job in 8 hours. How long would it take them if they worked together?

31. A pharmacist needs 100 liters of 50% alcohol solution. She has on hand a 30% alcohol solution and an 80% alcohol solution, which she can mix. How many liters of each will be required to make the 100 liters of 50% alcohol solution?

32. Admissions prices at a football game were \$6 for adults and \$2 for children. The total value of the tickets sold was \$2528, and 454 tickets were sold. How many adults and how many children attended the game?