

**Student:** \_\_\_\_\_  
**Date:** \_\_\_\_\_

**Instructor:** Pangyen Weng  
**Course:** MATH 115-51 Summer 2018

**Assignment:** HW 1B

1. Solve using the multiplication principle.

$$7z = 28$$

$$z = \boxed{\phantom{000}}$$

2. Solve using the addition principle. Don't forget to perform a check.

$$x - 3 = 21$$

$$\text{The solution is } x = \boxed{\phantom{000}}.$$

3. Solve using the principles together. Don't forget to check.

$$3x + 13 = -26$$

The solution is  $x = \boxed{\phantom{000}}$ .  
(Type an integer or a simplified fraction.)

4. Solve. Don't forget to check.

$$6x - 4 = 8$$

The solution is  $x = \boxed{\phantom{000}}$ .  
(Type an integer or a simplified fraction.)

5. Solve using the principles together. Check your answer.

$$9y - 3 = 19 - 2y$$

The solution is  $y = \boxed{\phantom{000}}$ .  
(Type an integer or a simplified fraction.)

6. Solve using the principles together. Check your answer.

$$7x - 7 = 13 + 12x$$

The solution is  $x = \boxed{\phantom{000}}$ .

7. Solve.

$$3(x + 4) = 5x + 10$$

$$x = \boxed{\phantom{000}}$$

8. Solve.

$$(a - 4)(a - 5) = 0$$

The solution(s) is/are  $\boxed{\phantom{000}}$ .  
(Simplify your answer. Use a comma to separate answers as needed. Type each solution only once.)

9. Solve.

$$t(t + 6) = 0$$

The solution(s) is/are .

(Simplify your answer. Use a comma to separate answers as needed. Type each solution only once.)

10.

Solve the following equation.

$$a^2 + 2a - 35 = 0$$

The solution(s) is/are .

(Type an integer or a simplified fraction. Use a comma to separate answers as needed. Type each solution only once.)

11. Find the domain of the rational expression.

$$\frac{2x - 18}{x(x - 9)}$$

Select the correct choice below and fill in any answer boxes within your choice.

- A. The domain is  $\{x \mid x \text{ is a real number and } x \neq \underline{\hspace{2cm}}\}$ .  
(Use a comma to separate answers as needed.)
- B. There are no numbers excluded from the domain.

12. Find the domain of the rational expression.

$$\frac{x - 1}{x^2 - 5x + 4}$$

Select the correct choice below and fill in any answer boxes within your choice.

- A. The domain is  $\{x \mid x \text{ is a real number and } x \neq \underline{\hspace{2cm}}\}$ .  
(Use a comma to separate answers as needed.)
- B. There are no numbers excluded from the domain.

13. Simplify by removing factors of 1.

$$\frac{t^2 - 36}{t^2 - 12t + 36}$$

$$\frac{t^2 - 36}{t^2 - 12t + 36} = \boxed{\hspace{2cm}}$$

14. Simplify.

$$\frac{z^2 - 2z + 1}{z^2 - 1}$$

$$\frac{z^2 - 2z + 1}{z^2 - 1} = \boxed{\hspace{2cm}}$$

15. Multiply and simplify.

$$\frac{y^2 + 2y - 63}{y^2 + 3y - 70} \cdot \frac{y^2 - 9y - 10}{y^2 + 10y + 9}$$

The simplified product is .

(Simplify your answer.)

16. Divide and simplify, if possible.

$$\frac{3x + 12}{2x - 6} \div \frac{(x + 4)^2}{(x - 3)^2}$$

$$\frac{3x + 12}{2x - 6} \div \frac{(x + 4)^2}{(x - 3)^2} = \text{} \text{ (Type your answer in factored form.)}$$

17. Add or subtract the following, then simplify.

$$\frac{x - 2y}{x + y} + \frac{2x + 10y}{x + y}$$

$$\frac{x - 2y}{x + y} + \frac{2x + 10y}{x + y} = \text{} \text{ (Simplify your answer.)}$$

18. Perform the indicated operation. Simplify, if possible.

$$\frac{3}{x^2 - 4} - \frac{5}{x + 2}$$

The difference is .

(Simplify your answer.)

19. Subtract and simplify.

$$\frac{y}{y^2 - 5y - 6} - \frac{3}{y + 1}$$

$$\frac{y}{y^2 - 5y - 6} - \frac{3}{y + 1} = \text{}$$

20. Simplify.

$$\sqrt{(-8)^2}$$

$$\sqrt{(-8)^2} = \text{}$$

21. Simplify. Assume that variables represent any real number.

$$\sqrt{49x^2}$$

$$\sqrt{49x^2} = \text{}$$

22. Simplify. Assume that all variables represent positive real numbers.

$$\sqrt[6]{64y^{12}}$$

$$\sqrt[6]{64y^{12}} = \boxed{\phantom{000}}$$

23. Write the radical expression in simplified form. Assume that all variables represent positive real numbers.

$$\sqrt[4]{324x^8y^{25}}$$

$$\sqrt[4]{324x^8y^{25}} = \boxed{\phantom{000}}$$

(Simplify your answer. Type an exact answer using radicals as needed.)

24. Simplify.

$$8\sqrt{20} - 2\sqrt{5}$$

$$8\sqrt{20} - 2\sqrt{5} = \boxed{\phantom{000}}$$

(Simplify your answer. Type an exact answer, using radicals as needed.)

25. Simplify.

$$3\sqrt{20} + 7\sqrt{45} - 4\sqrt{125}$$

$$3\sqrt{20} + 7\sqrt{45} - 4\sqrt{125} = \boxed{\phantom{000}}$$

(Simplify your answer. Type an exact answer, using radicals as needed.)

26. Write an equivalent expression using radical notation.

$$a^{\frac{3}{7}}$$

$$a^{\frac{3}{7}} = \boxed{\phantom{000}}$$

27. Write an equivalent expression using radical notation.

$$a^{\frac{4}{5}}$$

$$a^{\frac{4}{5}} = \boxed{\phantom{000}}$$

28. Rewrite without rational exponents, and simplify, if possible.

$$16^{\frac{3}{4}}$$

$$16^{\frac{3}{4}} = \boxed{\phantom{000}}$$

(Simplify your answer. Type an integer.)

29. Convert to radical notation and, if possible, simplify.

$$27^{\frac{4}{3}}$$

$$27^{\frac{4}{3}} = \boxed{\phantom{000}}$$

(Simplify your answer. Type an exact answer, using radicals as needed.)

30. **A.** Write the expression  $343^{-1/3}$  in radical notation.  
**B.** Evaluate the radical expression.
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**A.** Write the expression in radical notation.

$$343^{-1/3} = \boxed{\phantom{000}}$$

(Type an exact answer, using radicals as needed. Do not simplify.)

**B.** Evaluate the radical expression.

(Simplify your answer. Type an integer or a fraction.)

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31. Convert the radical expression to exponential notation.

$$\sqrt[8]{19^9}$$

The expression in exponential notation is  $19^{\boxed{\phantom{000}}}$ .

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32. Simplify and then, if appropriate, write in radical notation.

$$(a-4)^{\frac{11}{4}} (a-4)^{\frac{-3}{4}}$$

$$(a-4)^{\frac{11}{4}} (a-4)^{\frac{-3}{4}} = \boxed{\phantom{000}}$$

(Simplify your answer.)

1. 4

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2. 24

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3. -13

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4. 2

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5. 2

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6. -4

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7. 1

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8. 4,5

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9. -6,0

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10. 5, -7

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11. A. The domain is  $\{x \mid x \text{ is a real number and } x \neq \boxed{0,9}\}$ . (Use a comma to separate answers as needed.)

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12. A. The domain is  $\{x \mid x \text{ is a real number and } x \neq \boxed{4,1}\}$ . (Use a comma to separate answers as needed.)

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13.  $\frac{t+6}{t-6}$

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14.  $\frac{z-1}{z+1}$

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15.  $\frac{y-10}{y+10}$

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16.  $\frac{3(x-3)}{2(x+4)}$

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$$17. \frac{3x + 8y}{x + y}$$

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$$18. \frac{-5x + 13}{x^2 - 4}$$

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$$19. \frac{-2y + 18}{(y - 6)(y + 1)}$$

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$$20. 8$$

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$$21. 7|x|$$

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$$22. 2y^2$$

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$$23. 3x^2y^6\sqrt[4]{4y}$$

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$$24. 14\sqrt{5}$$

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$$25. 7\sqrt{5}$$

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$$26. 7\sqrt[3]{a^3}$$

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$$27. 5\sqrt[4]{a^4}$$

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$$28. 8$$

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$$29. 81$$

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$$30. \frac{1}{\sqrt[3]{343}}$$
$$\frac{1}{7}$$

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$$31. 9/8$$

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$$32. (a - 4)^2$$

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