Final Exam
Foundations of College Algebra

Name:_____

Directions: Answer the questions below. You are allowed to use a calculator, but not notes, a cell phone, or smart watch. Each question is worth 5 points.

1. (5 points) Simplify.

$$\sqrt{64} \div \sqrt{16} + 3^2 \cdot 2 - 17$$

2. (5 points) Find the prime factorization of the following number. Write any repeated factors using exponents.

$$684$$

3. (5 points) Multiply. Write the answer in simplest form.

$$1\frac{3}{4} \cdot \frac{4}{21}$$

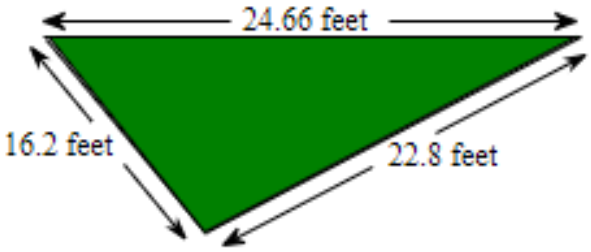
4. (5 points) Divide. Write your answer in simplest form.

$$\frac{3}{55} \div \frac{6}{77}$$

5. (5 points) Add and simplify.

$$\frac{3}{99} + \frac{3}{22}$$

6. (5 points) A landscape architect is planning a border for a flower garden shaped like a triangle. The sides of the garden measure 16.2 feet, 24.66 feed, and 22.8 feet. Find the amount of border material needed.



7. (5 points) A self-tanning lotion advertises that a 3-oz bottle will provide six applications. Jen found a great deal on a 14-oz bottle of the self-tanning lotion she had been using. Based on advertising claims, how many applications of the self-tanner should Jen expect?

8. (5 points) In 1999, total revenue of a music company from music sales and licensing was \$14.9 billion. It was forecasted that this number would continue to drop until it reached \$5.5 billion in 2014. Find this percent decrease in music revenue.

9. (5 points) The sales tax is \$141.30 on a stereo system purchase of \$1570. Find the sales tax rate.

10. (5 points) Sketch the right triangle and find the length of the side not given. (Each length is in units.)

$$\text{leg} = 17, \text{leg} = 23$$

11. (5 points) Decide whether the given number is a solution of the given equation.

$$\frac{x}{7} - 3 = -2; \qquad x = 35$$

12. (5 points) Solve the equation.

$$-6(n-2) = 8 - 5n$$

13. (5 points) Solve the equation.

$$x + 6 = 3x + 16$$

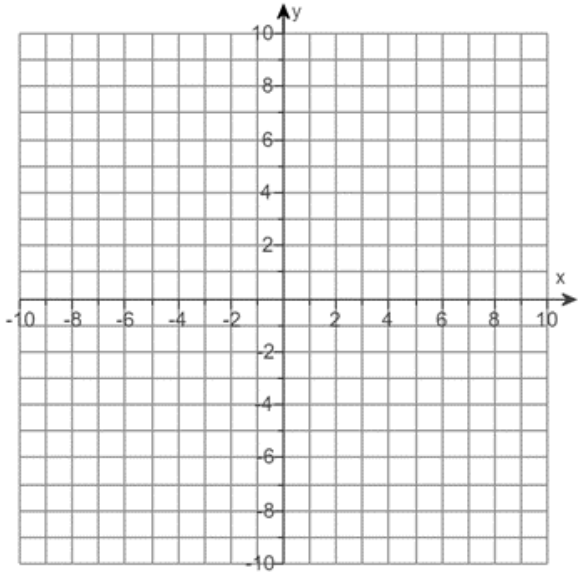
14. (5 points) Solve the equation for x.

$$\frac{3}{4}x - \frac{1}{2} = -2$$

15. (5 points) Solve the inequality. Write your answer in set notation.

$$7(x+1) - 6x \geq -8$$

16. (5 points) Graph the linear equation. $x + 3 = 0$



17. (5 points) Write an equation of the line with the given slope, m, and y-intercept $(0, b)$.

$$m = -\frac{3}{4}, b = \frac{2}{5}$$

18. (5 points) Use the product rule to simplify the expression. Write the results using exponents.

$$(3z^{11})(-2z^6)(z^2)$$

19. (5 points) Subtract.

$$(5z^2 - 9z + 9) - (10z^2 + 3z - 7)$$

20. (5 points) Multiply using the FOIL method.

$$(y^2 + 9)(5y + 7)$$

21. (5 points) Factor the trinomial completely.

$$x^2 - 2x - 24$$

22. (5 points) Solve the equation.

$$x^2 - 7x + 12 = 0$$