

Math 098
Sample Final Exam 3

Name: _____ (Please print)

Instructor: _____ **Score:** _____

1. Simplify: $\frac{x^0 y^4 z^{-6}}{x^3 y^4 z^3}$

1. _____ (3)

2. Solve the equation: $\frac{1}{12}(4x + 11) = \frac{1}{4}(2x + 1)$

2. _____ (3)

3. Solve for m : $K = \frac{ma}{F}$

3. _____ (3)

4. Expand: $(2x + 5y)^2$

4. _____ (3)

5. Use the square root properly to solve $2x^2 - 90 = 0$. Leave your answer in simplified radical form.

5. _____ (3)

6. Subtract: $\frac{4w-18}{3w-9} - \frac{w-5}{w-3}$

6. _____ (3)

7. Simplify: $\frac{-6 \pm \sqrt{90}}{9}$

7. _____ (3)

8. Solve: $\sqrt{3t - 7} = 4$

8. _____ (2)

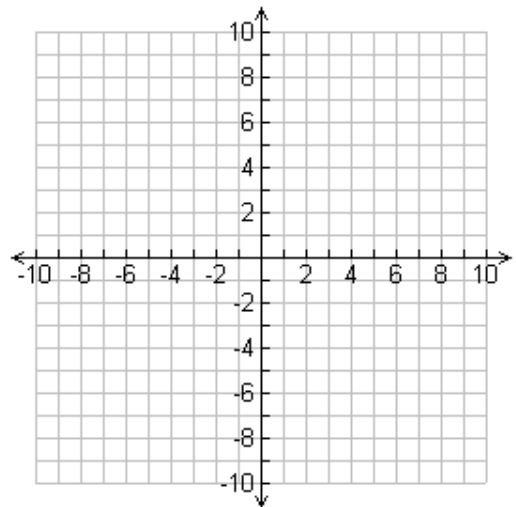
9. Divide: $\frac{20x^7 - 4x^3}{-4x^3}$

9. _____ (2)

10. Solve: $3^{3x+8} = 81$

10. _____ (2)

11. Graph the equation $2x - 3y = 12$



(2)

12. Factor completely: $3x^2 - 3x - 60$

12. _____ (3)

13. Factor completely: $12x^2y + 3xy^2 - 28x - 7y$

13. _____ (3)

14. Solve by factoring: $3x^3 - 9x^2 - 84x = 0$

14. _____ (4)

15. Solve: $\frac{x+5}{x} + \frac{3}{4} = \frac{1}{2}$

15. _____ (4)

16. Solve the following system of linear equations algebraically. Show work for full credit. Write your answer as an ordered pair.

$$7x + 2y = -1$$

$$3x - 4y = 19$$

16. (_____, _____) (3)

17. Divide: $\frac{4x+8}{36-12x} \div \frac{8x+40}{6x-18}$

17. _____ (4)

18. Subtract: $\sqrt{175} - \sqrt{252}$

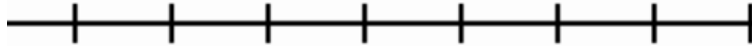
18. _____ (3)

19. Bill needs a score of at least 85 on the final exam.

a. Write the phrase as an inequality. Let the x represent Bill's score.

19a. _____ (1)

b. Graph the inequality on the number line.



(1)

20. Evaluate the expression and write in the inequality:

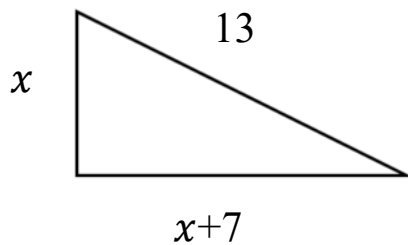
$$-(2)^3$$

$$-(-2)^3$$

inequality

(3)

21. Find the value of x .



21. _____ (4)

22. A 7 foot tree casts a 4 foot shadow. A lamp post casts a 28 foot shadow.
What is the height of the lamp post?



22. _____ feet (3)

23. A movie theater charges \$7.00 for an adult ticket and \$3.50 for a child's ticket. When the Avengers End Game movie came out, 500 tickets were sold for a total revenue of \$2,450. How many of each ticket was sold? Write a system of equations to solve this, using A (adults) and C (children). **You do not need to solve the system.**

Equation 1 _____ (2)

Equation 2 _____ (2)

24. Use the quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ to solve the equation

$3x^2 - 4x = 2$ for x . Round your answers to the nearest hundredth.

24. $x =$ _____ $x =$ _____ (4)

25. McDonalds has about 320,000 managers and each makes on average \$41,000 per year. How much money does McDonalds spend on manager's salary expense each year? Put both numbers in scientific notation first and leave your answer in scientific notation.

25. _____ (4)

26. Write $\sqrt[8]{D^3}$ using an exponent, without a radical

26. _____ (2)

27. Use the equation $y = -x^2 + 2x + 3$ to:

- a) Find the x – intercepts. Write your answers as ordered pairs.

(____, ____) and (____, ____) (3)

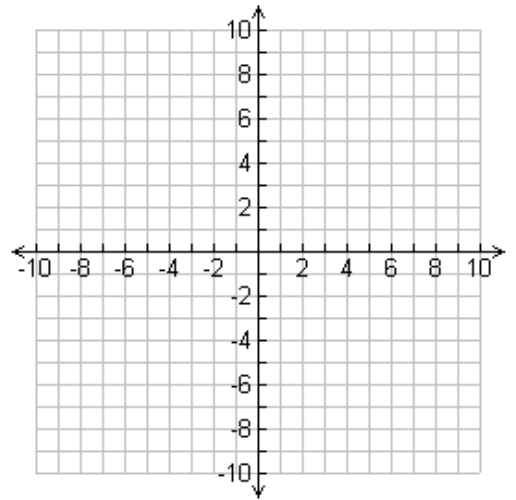
- b) Find the y – intercept. Write your answer as an ordered pair.

(____, ____) (3)

- c) Find the vertex. Write your answer as an ordered pair.

(____, ____) (3)

- d) Using your answers from above, draw a graph of the parabola. (2)



28. Tristan has \$30 saved. He earns \$15 each week delivering papers.

- a. Write an equation to show Tristan’s savings (y) after x weeks.

28a. _____ (2)

- b. What is the slope of the equation? (include units)

28b. _____ (3)

- c. Write a sentence to interpret the slope in the context of this problem.

(3)

- d. Tristan needs to have \$345 to buy a new bike. After how many weeks will Tristan be able to afford the new bike?

28d. _____ (2)