UMass Dartmouth Algebra Practice Exam

1. Basic operations with integers: $4(3^2) + 1 =$ _____

2. Express these ratios (fractions) as percentages. Do not round.

   (a) $\frac{54}{100} =$ ____% (b) $\frac{528}{10000} =$ ____% (c) $\frac{5}{1000} =$ ____%

3. Perform the indicated operations and write your answers as a fraction. Do not round.

   (a) $\frac{3}{4} - \frac{4}{7} =$ ____

   (b) $3 + \frac{7}{4} - \frac{5}{2} =$ ____

4. Write answer in scientific notation: $9500000 =$ _____ $0.0000312 =$ _____

5. Evaluate each expression.

   (a) $(-3)^3 =$ ____ (b) $-3^2 =$ ____ (c) $(-3)^2 . (\frac{2}{3})^2 =$ ____

6. Use the rules of exponents to simplify. $(3x^8y)^3 =$ ____

7. A car dealer recently had a promotion which they gave a 8% discount to the first 50 people through the door. If you are one of those people and the car you are interested in cost $\$26000$.

   The discount is $\$$_____ (if needed round to the nearest cent)

   The cost of the car is $\$$_____ (if needed round to the nearest cent)

8. Simplify expressions by the distributive property.

   $3b^8(8ab^5 + 2a^3b - b^3) =$ _____

9. Expand and simplify: $(x + 3)(7x - 4) =$ _____

10. Complete the ordered pair so that it is a solution for the given linear equation.

    $2x + 2y = 10; (-3, \_), (\_, 5)$

11. Solve the equation:

    $4x + 5 = 5x + 3, \quad x = \_\_\_\_$

12. Solve the equation and check the solution.

    $6(n - 1) = 4(n + 2) - n, \qquad n = \_\_\_\_$

13. Ratio and proportion (if needed to 3 decimal places)

    $\frac{x}{-5} = \frac{7}{-6}, \qquad x = \_\_$

14. Find the slope of the line through P and Q.

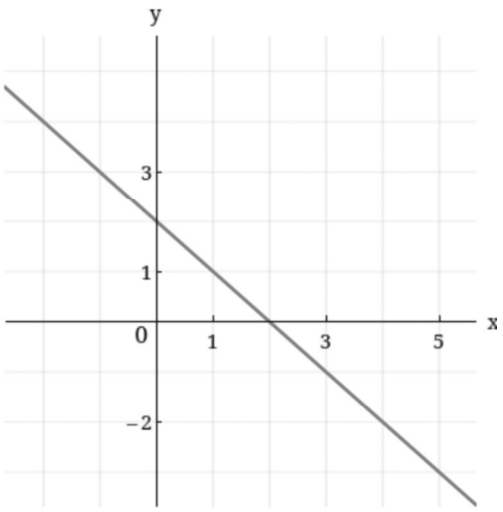
    $P(3, -3), Q(7, -1).$ Slope $= \_\_\_\_$

15. Write the equation of the line in slope-intercept form for the line with the given slope that passes through the given point.

    $m = 6, (1,4).$ $\qquad y = \_\_\_\_$

16. Find an equation for the line whose graph is sketched.

    $y = \_\_\_\_$



17. Use the elimination method to find all solutions of the system of equations.

$$\begin{cases} 4x + 3y = 21 \\ 8x + y = 27 \end{cases}$$

$(x, y) = (\_\_, \_\_)$

18. Evaluate the expression if $x = -2, y = 8$, and $z = -7$.

$$\frac{x^2 y}{z - 1} = \_\_\_\_\_$$

19. Solve the equation for the indicated variable. $PV = nRT$; for P. $P = \_\_\_$

20. Simplify and write the following expressions as a single fraction:

(a) $\frac{5}{3x} \div \frac{10}{33} = \_\_\_\_\_$ (b) $\frac{x}{11} + \frac{10}{77} = \_\_\_\_\_$

21. Simplify the complex fraction:

$$\frac{\frac{3}{xy} + \frac{1}{y}}{\frac{9}{xy} - \frac{1}{x}} = \_\_\_\_\_$$

22. (a) Complete the factoring for $y^2 + 5y + 6 = \_\_\_\_\_$

(b) Solve the equation $y^2 + 5y + 6 = 0$ by factoring. (Enter your answer as comma separated list):

$y = \_\_\_\_$

23. Factor the expression completely:

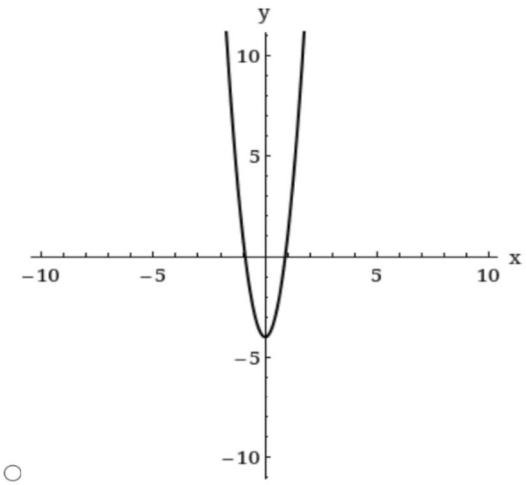
$9t^2 - 25s^2 = \_\_\_\_\_$

24. Solve the quadratic equation by quadratic formula. (Enter your answer as a comma separated list):

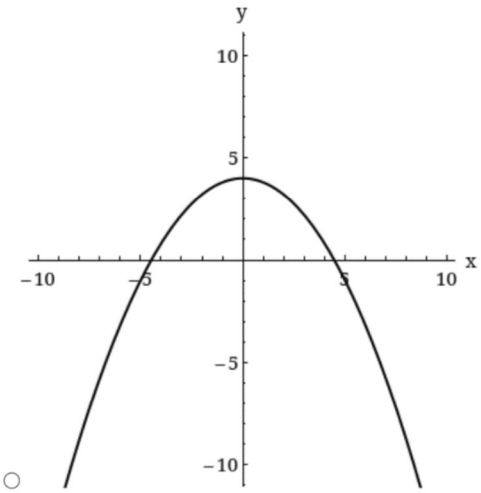
$2x^2 + 13x - 15 = 0, \quad x = \_\_\_\_\_$

25. Which of the following represents the graph of $y = \frac{1}{5}x^2 - 4$

a)



b)



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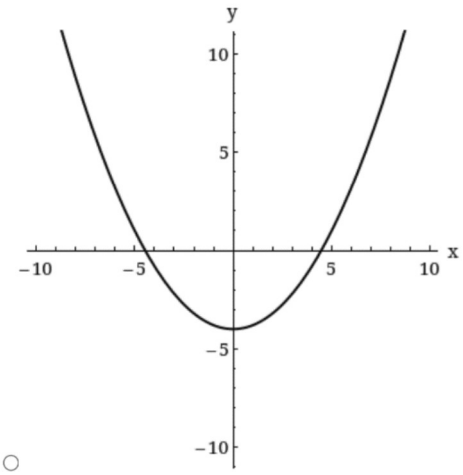

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