

1. Simplify: $\sqrt{121} + \sqrt{99}$

- a) $11\sqrt{11} + 11\sqrt{3}$ b) $11 + 3\sqrt{11}$ c) $3\sqrt{22}$ d) $2\sqrt{55}$

2. Simplify completely: $\frac{\sqrt{5} \cdot \sqrt{70}}{\sqrt{7}}$

- a) $5\sqrt{10}$ b) $10\sqrt{5}$ c) $5\sqrt{2}$ d) $2\sqrt{5}$

3. Perform the operation. Give the answer in scientific notation: $\frac{2 \times 10^2}{5 \times 10^7}$

- a) 0.4×10^{-5} b) 0.4×10^{-6} c) 4×10^{-5} d) 4×10^{-6}

4. Simplify: $\frac{x^4 y^3}{x^4 y^{-4}}$

- a) y b) xy^7 c) $\frac{x}{y}$ d) y^7

5. Simplify: $(3x^2 - 4x + 5) - (-2x^2 + 4x + 3)$

- a) $5x^2 - 8x + 8$ b) $x^2 + 8$ c) $5x^2 + 2$ d) $5x^2 - 8x + 2$

6. Multiply and simplify: $(4x + 3)(4x^2 - 2x - 1)$

- a) $16x^3 + 4x^2 - 10x - 3$ b) $16x^3 + 20x^2 + 10x - 3$ c) $16x^3 + 4x^2 + 10x - 3$ d) $16x^3 + 4x^2 - 10x + 3$

7. Simplify completely: $\frac{3a^2b^2 - ab}{ab}$

- a) $3ab$ b) $3ab - 1$ c) $3a^2b^2$ d) $3ab + 1$

8. Factor completely: $3x^3y - 48xy^3$

- a) $3(x^3y - 16xy^3)$ b) $3xy(x^2 - 16y^2)$ c) $3xy(x - 4y)(x + 4y)$ d) $3xy(x - 4y)(x - 4y)$

9. Which of the following is a factor of the polynomial $x^2 - 13x + 42$?

- a) $x - 6$ b) $x + 6$ c) $x - 3$ d) $x + 7$

10. Which of the following is a factor of the polynomial $15mn + 35my - 6kn - 14ky$?

- a) $5m + 2k$ b) $2m - 5k$ c) $2n + 6y$ d) $5m - 2k$

11. If x represents a number, then which equation is the correct translation of the sentence :

Twenty four subtracted from 3 times a number is 12?

- a) $24 - 3x = 12$ b) $3x - 12 = 24$ c) $3x - 24 = 12$ d) $24 + 3x = 12$

12. Solve for x : $16 - 4x = -2(x - 1)$

- a) $x = 9$ b) $x = 7$ c) $x = -7$ d) $x = \frac{17}{2}$

13. What is the value of the y - coordinate of the solution to the system: $\begin{cases} 3x + y = 6 \\ 3x - 3y = 18 \end{cases}$

- a) $y = 6$ b) $y = -3$ c) $y = 3$ d) $y = -6$

14. Solve for x : $z = 5x - 2y$

- a) $x = \frac{z+2y}{5}$ b) $x = \frac{z-2y}{5}$ c) $x = z - 2y$ d) $x = \frac{-z+2y}{5}$

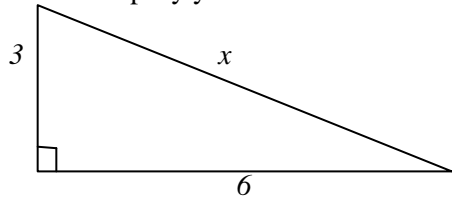
15. Find *all* solutions to the equation: $x^2 - 2x - 24 = 0$

- a) $x = -6$ or $x = 4$ b) $x = -3$ or $x = 8$ c) $x = 8$ or $x = -3$ d) $x = 6$ or $x = -4$

16. Find *all* solutions to the equation: $4x^2 - 25 = 0$

- a) *only* $x = \frac{25}{4}$ b) $x = -\frac{25}{4}$ or $x = \frac{25}{4}$ c) *only* $x = \frac{5}{2}$ d) $x = \frac{5}{2}$ or $x = -\frac{5}{2}$

17. Find x and simplify your answer:



- a) $3\sqrt{5}$ b) $9\sqrt{5}$ c) $x = 5$ d) $x = 9$

18. Solve the inequality: $3x - 2 \geq 7x + 6$

- a) $x \leq -2$ b) $x \geq 2$ c) $x \geq -2$ d) $x \leq 2$

Note: Refer to question #18. Graph the solution to $3x - 2 \geq 7x + 6$

19. Evaluate: $f(-1)$ for the function $f(x) = 5x^2 - 4x$

- a) 29 b) -1 c) 9 d) 1

20. Find x - and y - intercepts for $4x - 3y = -12$.

- a) x - intercept (3, 0), y - intercept (0, 4) c) x - intercept (-3, 0), y - intercept (0, 4)

- b) x - intercept (3, 0), y - intercept (0, -4) d) x - intercept (-3, 0), y - intercept (0, -4)

Note: Refer to question #20. Use the x -intercept and the y -intercept to graph the equation of the line $4x - 3y = -12$.

21. Find the equation of the line passing through the points (2, -9) and (-1, -3). Write the equation in slope-intercept form.

- a) $y = 4x + 1$ b) $y = -2x - 5$ c) $y = -2x + 1$ d) $y = 12x + 9$

22. Find the equation of the horizontal line that passes through the point: (2, -3)

- a) $x = 2$ b) $y = -\frac{3}{2}x$ c) $y = -3$ d) $y = x - 3$

23. Find the slope and y - intercept for the graph of the equation: $3x - 4y = 24$

- a) Slope = $-\frac{3}{4}$, y - intercept = (0, -6) c) Slope = $\frac{4}{3}$, y - intercept = (0, 24)

- b) Slope = $-\frac{4}{3}$, y - intercept = (0, 24) d) Slope = $\frac{3}{4}$, y - intercept = (0, -6)

24. If you pay \$42 for seven t-shirts, how many t-shirts can you buy for \$108?

- a) 648 b) 18 c) 14 d) 36

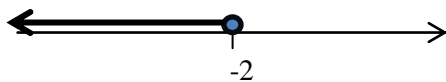
25. The price of the coat decreased by 25%. How much is the sale price, if the original price was \$320?

- a) \$240 b) \$80 c) \$270 d) \$250

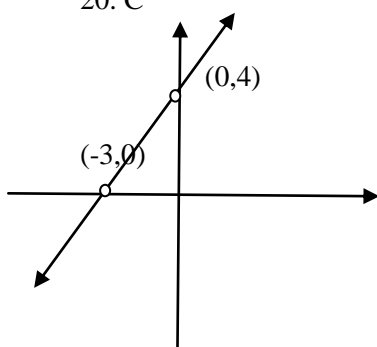
Borough of Manhattan Community College Department of Mathematics
MAT 012/051 Final /CUNY Examination Review
FORM A

Answer Key:

- 1. B
- 2. C
- 3. D
- 4. D
- 5. D
- 6. A
- 7. B
- 8. C
- 9. A
- 10. D
- 11. C
- 12. B
- 13. B
- 14. A
- 15. D
- 16. D
- 17. A
- 18. A



- 19. C
- 20. C



- 21. B
- 22. C
- 23. D
- 24. B
- 25. A