1. Simplify completely: $\sqrt{72} + \sqrt{32}$

a) $3\sqrt{8} + 4\sqrt{2}$ b) $5\sqrt{8}$ c) $10\sqrt{2}$ d) $2\sqrt{26}$

2. Simplify completely: $\sqrt{7}(\sqrt{21} + \sqrt{7})$

a) $\sqrt{147} + \sqrt{7}$ b) $7\sqrt{21} + \sqrt{7}$ c) $7\sqrt{3} + \sqrt{7}$ d) $7\sqrt{3} + 7$

3. Perform the operation. Give the answer in scientific notation: $(5 \times 10^{-3})(3 \times 10^{6})$

a) 1.5×10^{4} b) 15×10^{3} c) 1.5×10^{2} d) 15×10^{4}

4. Simplify: $\dfrac{m^2 n^7}{m^2 n^{-3}}$

a) mn^4 b) n^4 c) n^{10} d) mn^{10}

5. Simplify: $(x^2 + 2x - 1) - (-3x^2 - 7x - 4)$

a) $-2x^2 - 5x - 5$ b) $4x^2 + 9x + 3$ c) $4x^2 - 5x + 3$ d) $-4x^2 + 9x - 5$

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

a) $2x^3 + 5x^2 - 16x + 6$ b) $2x^3 + 5x^2 - 8x + 6$ c) $2x^3 + 5x^2 - 16x - 6$ d) $2x^3 + 11x^2 - 16x - 6$

7. Simplify completely: $\dfrac{50x^8 + 75x^5 + 5x^3}{-5x^3}$

a) $-10x^5 - 70x^2$ b) $50x^8 + 75x^5$ c) $-10x^5 - 15x^2 + 1$ d) $-10x^5 - 15x^2 - 1$

8. Factor completely: $45x^2 y - 125y^3$

a) $5y(9x^2 - 25y^2)$ b) $5y(3x - 5y)(3x - 5y)$ c) $5y^2(9x^2 - 25y)$ d) $5y(3x - 5y)(3x + 5y)$

9. Which of the following is a factor of the polynomial $2r^3 + 4r^2 - 30r$?

a) $r - 3$ b) $r + 3$ c) $r - 5$ d) $r + 7$

10. Which of the following is a factor of the polynomial $2hk + 6hn - 5mk - 15mn$?

a) $2h + 5m$ b) $2h - 5m$ c) $k - 3n$ d) $k - 5n$

11. Write an equation:

     Seventeen is 5 less than 7 times a number.

a) $17 = 5 - 7x$ b) $17 - 5 = 7x$ c) $17 = 7x - 5$ d) $17 = 7(x - 5)$

12. Solve for x: $6 - (3x - 5) = 7x - 9$

a) $x = -2$ b) $x = 2$ c) $x = -1$ d) $x = 1$

13. What is the value of the x coordinate of the solution to the system of equations?

$$\begin{cases} 3x - y = 4 \\ x + 2y = 6 \end{cases}$$

a) $x = -2$ b) $x = 2$ c) $x = 5$ d) $x = \dfrac{1}{2}$

14. Solve for n: $2m = 2n + k$

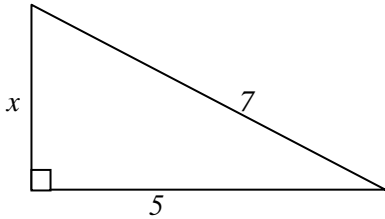a) $n = \frac{k-2m}{2}$ b) $n = 2m + k$ c) $n = m - k$ d) $n = \frac{2m-k}{2}$

15. Find *all* solutions to the equation: $6x^2 + 3x = 0$

a) *only* $x = -\frac{1}{2}$ b) *only* $x = \frac{1}{2}$ c) $x = 0$ *and* $x = -\frac{1}{2}$ d) $x = \frac{1}{2}$ *and* $x = -\frac{1}{2}$

16. Find *all* solutions to the equation: $18x^2 - 50 = 0$

a) $x = \frac{5}{3}$ *and* $x = -\frac{5}{3}$ b) *only* $x = \frac{25}{9}$ c) *only* $x = -\frac{5}{3}$ d) $x = \frac{3}{5}$ *and* $x = -\frac{3}{5}$

17. Find x and simplify your answer*:*

a) $x = 6\sqrt{2}$ b) $x = 4\sqrt{6}$ c) $x = 2\sqrt{6}$ d) $x = 2\sqrt{12}$

18. Solve the inequality: $3(x - 8) < 6(x - 5)$
a) $x < -2$ b) $x > 2$ c) $x > -2$ d) $x < 2$

Note: Refer to question #18. Graph the solution to $3(x - 8) < 6(x - 5)$.

19. Evaluate: $f(-2)$ for the function $f(x) = -6x^2 - 15$
a) -159 b) 129 c) -39 d) 9

20. Find x- and y- intercepts: $-8x + 6y = 24$

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 $-8x + 6y = 24$.

21. Find the equation of the line passing through the points $(0, 1)$ and $(-2,0)$. Write the equation in slope-intercept form.

a) $y = -2x + 1$ b) $y = \frac{1}{2}x + 1$ c) $y = 2x - 1$ d) $y = \frac{1}{2}x - 1$

22. Find an equation of a vertical line passing through the point $(-2, -1)$.
a) $x = -2$ b) $y = \frac{1}{2}x$ c) $y = -1$ d) $x = \frac{1}{2}$

23. Write the equation in slope y-intercept form: $4x - 5y = 10$
a) $y = \frac{4}{5}x + 2$ b) $y = \frac{4}{5}x - 2$ c) $y = -\frac{4}{5}x - 2$ d) $y = -\frac{4}{5}x + 2$

24. If 4 gallons of gas cost \$14, then how much do 10 gallons cost?
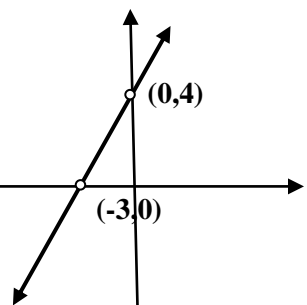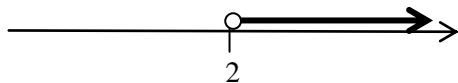a) $35\ gal$ b) $140\ gal$ c) $28\ gal$ d) $40\ gal$

25. A worker's take-home pay after 40% deduction is \$480. What is the worker's gross pay?
a) \$288   b) \$800   c) \$192   d) \$1200

MAT 012/051 Final /CUNY Examination Review

FORM B

Answer Key:

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

(number line graphic with open circle at 2 and arrow pointing right)

2

19. C
20. C

(coordinate graph showing a line through points (0,4) and (-3,0))

(0,4)

(-3,0)

21. B
22. A
23. B
24. A
25. B