

Borough of Manhattan Community College Department of Mathematics

MAT 012/051 Final /CUNY Examination Review

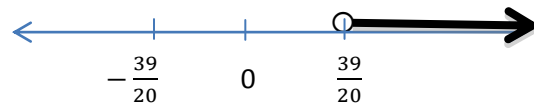
FORM E

NAME: _____

1. Simplify: $6\sqrt{48} - \sqrt{72} - 3\sqrt{300}$
2. Simplify completely: $(\sqrt{5} + 3)(2\sqrt{5} - 1)$
3. Perform the operation. Give the answer in scientific notation: $\frac{(4.8 \times 10^2)(2 \times 10^{-1})}{(1.6 \times 10^{-3})}$
4. Simplify: $\left(\frac{1}{2}m^{-2}n^3\right)^3$
5. Simplify: Subtract $3x^2 + 2x - 5$ from $-x^2 - 2x + 7$
6. Multiply and simplify: $(7 - 5x)(7 + 5x)$
7. Simplify completely: $\frac{-16a^5 + 8a^2 - 4a}{8a}$
8. Factor completely: $2x^5y - 32xy^5$
9. Factor the trinomial completely: $20x^2 + 9x - 20$
10. Factor the polynomial by grouping: $5x^2 - 4ax - 10x + 8a$
11. Write an equation: Five times the difference of twice a number and 8 is 6.
12. Solve for y: $4(2y + 1) - (y - 3) = 2y + 6$
13. Solve the system:
$$\begin{cases} 5x - 4y = -7 \\ -6x + 8y = 2 \end{cases}$$
14. Solve for x: $p = \frac{x+y}{2}$
15. Find all solutions to the equation: $x^2 + 10x = -21$
16. Find all solutions to the equation: $-5x^2 = -125$
17. If a right triangle has base equal to 5 feet and height equal to 3 feet, find the hypotenuse.
18. Solve the inequality and graph the solution: $\frac{4}{3}x - 2 > \frac{2}{9}x + \frac{1}{6}$
19. Evaluate: $f(-2)$ for the function $f(x) = x^3 + x - 1$
20. Find x- and y- intercepts and then use them to draw the graph: $x = 4$

21. Find the equation of the line passing through the points $(-2, 8)$ and $(1, -1)$. Write the equation in slope-intercept form.
22. Find the equation of **i)** a vertical line and **ii)** a horizontal line that passes through the following point: $(-2, 6)$
23. Find the slope and y - intercept for the graph of the equation: $-x + 3y = -6$
24. Solve the following proportion problems: In a shipment of 200 parts, 7 are found to be defective. How many defective parts should be expected in a shipment of 500?
25. Solve the following percent problems: In 5 years the price of a car increased from \$21,000 to \$28,000. What is the percent increase in the price?

1. $-6\sqrt{3} - 6\sqrt{2}$
2. $7 + 5\sqrt{5}$
3. 6.0×10^4
4. $\frac{n^9}{8m^6}$
5. $-4x^2 - 4x + 12$
6. $49 - 25x^2$
7. $-2a^4 + a - \frac{1}{2}$
8. $2xy(x^2 + 4y^2)(x + 2y)(x - 2y)$
9. $(5x - 4)(4x + 5)$
10. $(5x - 4a)(x - 2)$
11. $5(2x - 8) = 6$
12. $y = -\frac{1}{5}$
13. $(-3, -2)$
14. $x = 2p - y$
15. $x = -3$ or $x = -7$
16. $x = -5$ or $x = 5$
17. Hypotenuse is $\sqrt{34}$
18. $x > \frac{39}{20}$



19. -11
20. x- intercept: $(4,0)$ and y- intercept: None
21. $y = -3x + 2$
22. i) $x = -2$ ii) $y = 6$
23. $m = \frac{1}{3}$ and y-intercept: $(0, -2)$
24. $17\frac{1}{2}$ parts defective
25. $33\frac{1}{3}\%$ percent increase