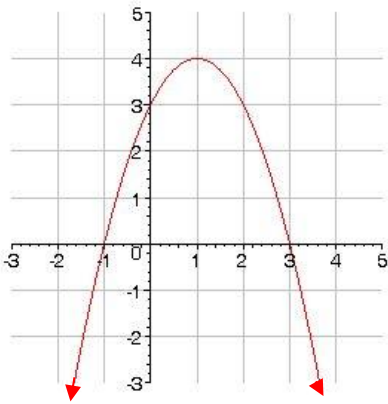
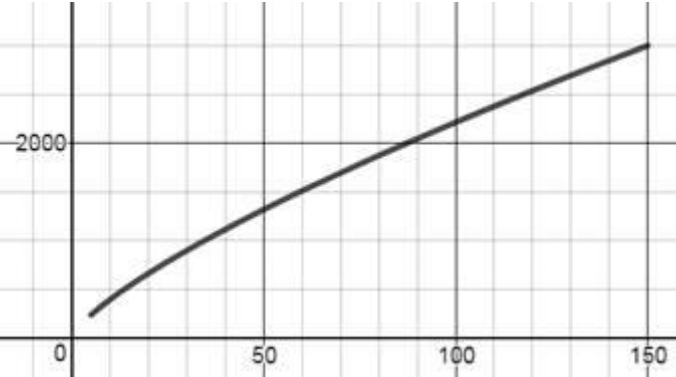


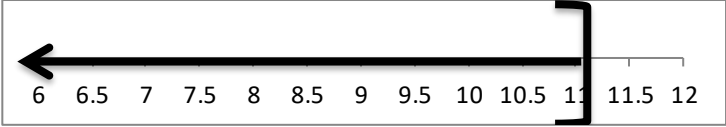
MA-119 Review for Final Exam: Fall 2025 – Spring 2026

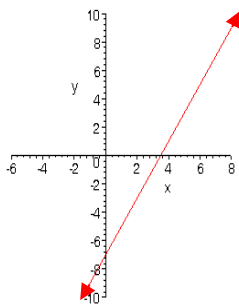
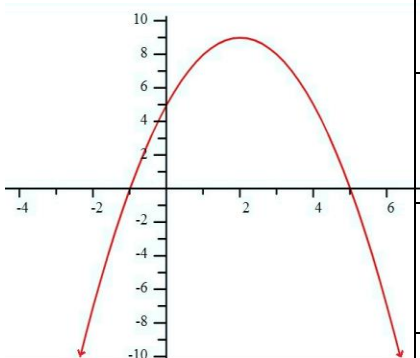
1. Simplify completely and express in terms of positive exponents: $\left(\frac{6x^5y^{-2}z}{2x^{-3}y^4z^{-11}}\right)^{-3}$	
2. Find the slope-intercept form of the equation of the line that is perpendicular to $4y - 2x + 7 = 0$ and passes through the point $(2, -5)$.	
3. Find the slope-intercept form of the equation of the line through the points $(-2, 4)$ and $(2, 6)$.	
4. Solve for x and check the solutions: $ 3x + 2 + 1 = 6$	
5. Factor completely: a) $12xy - 10y - 18x + 15$ b) $x^3 + 5x^2 - 16x - 80$	
6. Based on the graph on the right, a) For what values of x is y positive? Express your answer in interval notation. b) Find the domain of the function. c) Find the range of the function. d) Determine the value of $f(1)$. e) Determine the coordinates of the x -intercepts. f) Determine the coordinates of the y -intercept. g) For what values of x is $f(x) = 3$?	
7. Solve for x and express your answer in interval notation, set builder notation, and graph: $4x - 5 \leq 3(x + 2)$	
8. Factor completely: $x^3y - 8y$	
9. State the restrictions on the variable of the equation and solve it: $\frac{2}{x-2} - \frac{14}{x^2+3x-10} = 1$	
10. Find the domain of: $f(x) = \sqrt{-4 - 2x}$. Express your answer in interval and set builder notation.	
11. Calculate using radicals: $(-27)^{\frac{2}{3}}$	
12. Assuming that x and y are positive, express in radical form and simplify: $(-8x^6y^2)^{\frac{1}{3}}$	
13. Solve and check: $\sqrt{2x - 1} + 2 = x$.	
14. Simplify and express in $a + bi$ form: $(3 + 4i)^2$	
15. Solve using the Square Root Property and express the solution in $a + bi$ form: $(x - 7)^2 = -16$.	
16. A picture measuring 50 centimeters by 30 centimeters is surrounded by a frame of uniform width. If the combined area of the picture and the frame is 2204 square centimeters, determine the width of the frame.	
17. The sum of a positive number and twice its square is 11.88. Find the number.	
18. \$20,000 is invested at 5% interest per year compounded quarterly. Using the formula: $A = P\left(1 + \frac{r}{n}\right)^{nt}$, determine how much the investment is worth after 6 years.	

19. Solve for x : $\log_8 x = \frac{4}{3}$
20. Solve for x to the nearest thousandth: $3^x = 62$
21. Solve for x : $\log_2(x + 4) = 3 - \log_2(x - 3)$
22. Solve for x : $\log_3(6x + 27) = 2 + \log_3(x + 2)$
23. If $f(x) = x^2 - 7x + 4$, determine $f(0)$, $f(-3)$, and $f(2t)$.
24. Find the domain of: $f(x) = \frac{1}{5-4x}$. Express your answer in interval notation and in set builder notation.
25. Solve the system of equations <div style="text-align: center;"> $4x - 2y = 16$ $-3x - 5y = 1$ </div>
26. Solve for x and write the solution using interval notation: $-12 \leq 3x - 2 < 7$
27. a) Find the point-slope form of the equation of the line parallel to $6x - 3y = 12$ that passes through the point $(2, -3)$. b) Find the slope-intercept form of the equation. c) Graph the resulting equation. Label the axes and indicate an appropriate scale. d) From your graph, determine the coordinates of the x -intercept.
28. Solve $\frac{1}{a} = \frac{1}{b} + \frac{1}{c}$ for b .
29. Factor completely: $8x^6 + 27y^3$
30. Simplify: $\frac{\frac{1}{x} - \frac{1}{y}}{1 - \frac{x^2}{y^2}}$
31. If $f(x) = \sqrt[3]{3x - 8}$, evaluate $f(0)$ and $f(24)$.
32. Rationalize the denominator and simplify if possible: $\frac{6}{3\sqrt{x}-2}$
33. Assuming that x and y are positive, simplify: $\sqrt{24x^9y^6}$
34. Simplify and express results in radical form: $2\sqrt{9} - 5\sqrt{3} - \sqrt{75}$
35. Solve and check: $\sqrt[3]{5 + 3x} = -4$
36. Calculate and write the quotient $\frac{5i}{-2+3i}$ in $a + bi$ form.
37. Solve by Completing the Square: $x^2 - 6x + 3 = 0$
38. The hypotenuse of a right triangle is 7 feet long. One leg is 4 feet shorter than the other. Find the length of each leg to the nearest hundredth of a foot.
39. For the function $f(x) = -x^2 + 4x + 5$: a) Determine the coordinates of the x -intercepts (if any). b) Find the coordinates of the y -intercept. c) Find the equation of the axis of symmetry. d) Determine the coordinates of the vertex. e) Graph the function, and label and indicate an appropriate scale on the axes.
40. A car is depreciating according to the formula: $V = 35,000(3.21)^{-0.05t}$ where t is the age of the car in years and V is the value of the car in dollars. Find the value of the car when it is five and one-half years old.

41. Solve the equation: $\log_4 x + \log_4(x - 6) = 2$ by (a) finding an equivalent equation without logarithms, (b) and solving this equation.
42. Using the formula: $A = P \left(1 + \frac{r}{n}\right)^{nt}$, determine how many years, to the nearest hundredth, it will take to double your money if you invest \$15,000 at $4\frac{1}{2}\%$ interest per year compounded semiannually.
43. Subtract and simplify: $\frac{4x-4}{x^2+2x-15} - \frac{3}{x+5}$
44. Divide and simplify: $\frac{x^2-x-12}{2x+8} \div \frac{2x^2+5x-3}{8x-4}$
45. The revenue of a company is given by the equation $R = x(1000 - 4x)$, where R is the revenue of the company, in dollars, when they sell x units of a product. How many units of the product should they sell to make a revenue of \$60,000?
46. The value, V , of a car measured in dollars, is given by the formula: $V = 40,000(1.23)^{-0.4t}$ where t is the age of the car in years. Find the age of the car, to the nearest hundredth of a year, when the value of the car will be \$20,000.
<p>47. The function $f(x) = 70x^{\frac{3}{4}}$ models the number of calories per day, a person needs to maintain life in terms of that person's weight, x, in kilograms. (x = person's weight; $f(x)$ = calories needed).</p> <p>a) If a person weighs 80 kilograms, how many calories per day does this person need to maintain life? Round your answer to the nearest calorie.</p> <p>b) Mark a point on the graph that conveys the information from part a).</p>  <p>c) Find what is the weight of a person who needs 1500 calories to maintain life? Round your answer to the nearest kilogram.</p>

Answers

1. $\frac{y^{18}}{27x^{24}z^{36}}$	2. $y = -2x - 1$	3. $y = \frac{1}{2}x + 5$	4. $x = 1$ $x = -\frac{7}{3}$	5. a) $(6x - 5)(2y - 3)$ b) $(x - 4)(x + 4)(x + 5)$
6. a) $(-1,3)$, b) (∞, ∞) , c) $(-\infty, 4]$, d) 4, e) $(-1,0)$ and $(3,0)$, f) $(0,3)$, g) $x = 0, x = 2$				
7. $x \leq 11, (-\infty, 11], \{x x \leq 11\}$, 				
8. $y(x - 2)(x^2 + 2x + 4)$	9. $x \neq 2$ and $x \neq -5$. $x = -3$	10. $\{x x \leq -2\}$, $(-\infty, -2]$	11. 9	12. $-2x^2\sqrt[3]{y^2}$

13. $x = 5$	14. $-7 + 24i$	15. $x = 7 \pm 4i$	16. 4 centimeters	17. 2.2
18. $A = \$26,947.02$	19. $x = 16$	20. $x = 3.757$	21. $x = 4$	22. $x = 5$
23. $f(0) = 4, f(-3) = 34, f(2t) = 4t^2 - 14t + 4$		25. $(x, y) = (3, -2)$	26. $[-\frac{10}{3}, 3)$	
24. $\{x \text{ a real number and } x \neq \frac{5}{4}\},$ $(-\infty, \frac{5}{4}) \cup (\frac{5}{4}, \infty)$		28. $b = \frac{ac}{c-a}$	32. $\frac{18\sqrt{x}+12}{9x-4}$	
27. a) $y + 3 = 2(x - 2)$ b) $y = 2x - 7$ c) see graph d) $(\frac{7}{2}, 0)$ 		29. $(2x^2 + 3y)(4x^4 - 6x^2y + 9y^2)$		
		30. $\frac{y}{x(y+x)}$		
		31. $f(0) = -2, f(24) = 4$		
39. a) $(-1, 0)$ and $(5, 0)$ b) $(0, 5)$ c) $x = 2$ d) $(2, 9)$ e) see graph 		33. $2x^4y^3\sqrt{6x}$	34. $6 - 10\sqrt{3}$	
		35. $x = -23$	36. $\frac{15}{13} - \frac{10}{13}i$	
		37. $x = 3 \pm \sqrt{6}$	40. \$25,396.81	
		38. 6.53 feet and 2.53 feet		
		41. (a) $x(x - 6) = 16,$ $x \neq -2$ (b) $x = 8$	42. 15.58 years	
43. $\frac{1}{x-3}$	44. $\frac{2(x-4)}{x+4}$	45. 100 units or 150 units		
46. 8.37 years	47. (a) 1872 calories (b) The point (80,1872) (c) 60 kilograms.			