

LAGUARDIA COMMUNITY COLLEGE  
of the City University of New York  
DEPARTMENT OF MATHEMATICS, ENGINEERING, AND COMPUTER SCIENCE  
**PEM Wiki - MAT096.1527 & CLIP 2C/2D** – Professor M.C. Cuellar

**List of Exercises**

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1. Simplify.

$$\sqrt{3}(4 - 2\sqrt{6})$$

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2. Simplify.

$$6\sqrt{2} - \sqrt{12} + 5\sqrt{8}$$

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3. Simplify.

$$\frac{(5\sqrt{24})(3\sqrt{45})}{\sqrt{6}}$$

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4. Simplify.

$$-5\sqrt{3} - \sqrt{8} + 4\sqrt{18} - 2\sqrt{12}$$

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5. Simplify.

$$7\sqrt{24} - 3\sqrt{6}$$

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6. Simplify completely.

$$\sqrt{5}(\sqrt{15} + \sqrt{5})$$

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7. Multiply.

$$(1.7 \times 10^2)(6.3 \times 10^5)$$

[Answer must be in scientific notation.]

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8. Write the number 23,000,000 in scientific notation.

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9. Evaluate.

$$\frac{(24 \times 10^5)(2 \times 10^3)}{(3 \times 10^{-4})}$$

[Answer must be in scientific notation.]

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**10.** Multiply.

$$(3 \times 10^6)(4 \times 10^{-2})$$

[Answer must be in scientific notation.]

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**11.** Simplify.

$$\frac{x^5 x^7}{(x^3)^2}$$

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**12.** Simplify.

$$\frac{(2y^5)^3(y^4)}{(8y)^2}$$

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**13.** Simplify and write with positive exponents.

$$(-x^3 y^{-6} z^5)(8x^{-3} y z^4)$$

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**14.** Simplify.

$$(-7x^3 y^2 + 4xy) - (3x^3 y^2 + 2xy)$$

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**15.** Simplify.

$$(-5a^2 + 3a - 6) - (4a^2 + 2a - 3)$$

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**16.** Simplify.

$$(5x^2 - 7x + 9) - (-2x^2 - 3x + 2)$$

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**17.** Multiply.

$$(4x - 3)(2x^2 - 5x - 4)$$

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**18.** Multiply.

$$(3x + 2)(4x^2 - 2x - 1)$$

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**19.** Multiply.

$$(2x - 5)(x^2 + 4x - 6)$$

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**20.** Multiply.

$$(7x - 2)^2$$

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**21.** Divide.

$$\frac{21x^3y^2 - 28x^2y^2 + 7xy^2}{-7xy}$$

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**22.** Divide.

$$\frac{-24n^6 + 18n^4 + 6n^2}{6n^2}$$

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**23.** Simplify completely.

$$\frac{25x^3 - 35x^2 + 5x}{-5x}$$

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**24.** Factor completely.

$$6x^3y^2 - 24xz^2$$

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**25.** Factor completely.

$$4x^2 - 13x + 10$$

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**26.** Factor completely.

$$8sx + 28sy - 6tx - 21ty$$

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**27.** Factor completely.

$$24s^2t - 18st - 15t$$

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**28.** Factor completely.

$$32x^3y - 18xy$$

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**29.** Factor completely.

$$6z^2 + 17z - 3$$

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**30.** Factor completely.

$$15xy - 10xq - 6py + 4pq$$

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**31.** Factor completely.

$$18a^2 - 24a^3b + 8a^2b^2$$

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**32.** Solve.

$$-3(x - 4) + 8 = 4(2x - 1) - 9$$

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**33.** Solve.

$$8x - 3(x - 4) = 2x - 9$$

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**34.** What is the value of the  $x$ -coordinate of the solution to the following system of equations?

$$\begin{aligned} 3x + y &= 3 \\ -2x + 2y &= -10 \end{aligned}$$

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**35.** What is the value of the  $y$ -coordinate of the solution to the following system of equations?

$$\begin{aligned} -4x + 8y &= 10 \\ 3x - 4y &= -8 \end{aligned}$$

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**36.** Graph the solution to the following system of equations:

$$\begin{aligned} -2x + y &= 4 \\ 4x + 2y &= 8 \end{aligned}$$

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**37.** Solve for  $t$ .

$$v = v_0 + at$$

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**38.** Solve for  $w$ .

$$P = 2l + 2w$$

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**39.** Solve for  $x$ .

$$z = 5x - 7y$$

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**40.** Solve for all values of  $x$ .

$$(2x + 3)(x - 8) = 0$$

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**41.** Solve for all values of  $n$ .

$$5n^2 + 15n = 0$$

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**42.** Solve for all values of  $x$ .

$$4x^2 - 25 = 0$$

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**43.** Solve for all values of  $t$ .

$$6t^2 = 144$$

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**44.** Solve for all values of  $x$ .

$$8x^2 = 36x$$

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**45.** Finding the missing side of right triangle with one side of dimension 7 in and hypotenuse of 11 in.

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**46.** Find all solutions to the equation.

$$x^2 + 2x = 15$$

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**47.** Find all solutions to the equation.

$$6x^2 = 150$$

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**48.** What is the hypotenuse in a right triangle of sides 4 and 6 centimeters?

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**49.** Solve.

$$x - 5(4x + 8) \geq 3x - 2(x + 10)$$

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**50.** Find the graph of the solution to the inequality.

$$-4(3x - 5) < 2(x - 11)$$

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**51.** Find the graph of the solution to the inequality.

$$-10x + 5(x - 3) > -4(x + 2)$$

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**52.** Find the graph of the solution to the inequality.

$$2x - 3 \geq 5x + 6$$

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**53.** If  $f(x) = -3x^2 + 7x - 5$ , find  $f(-5)$ .

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**54.** If  $f(x) = 2x^2 - 9x - 1$ , find  $f(-a)$ .

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**55.** Evaluate  $f(2)$  for the function  $f(x)$ .

$$f(x) = 5x^2 - 8x + 2$$

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**56.** Find the equation of the line that passes through the points  $(-5, -6)$  and  $(-7, 4)$ . Write the equation in slope intercept form.

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**57.** Find the equation of the vertical line that passes through the point  $(-2, 5)$ .

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**58.** Find the slope and  $y$  intercept of the line  $7y - 4x = 21$ .

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**59.** Graph the equation  $9x - 6y = 18$ .

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**60.** Find the equation of the line that passes through the points  $(-2, 3)$  and  $(1, -9)$ . Write the equation in slope intercept form.

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**61.** Find the equation of the horizontal line that passes through the point  $(7, -4)$ .

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**62.** Find the slope and  $y$  intercept of the line  $3x - 6y = 48$ .

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**63.** Find the equation of the line that passes through the point  $(-3, 4)$  and has slope  $-\frac{2}{3}$ .

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**64.** Graph the equation  $-10x - 5y = 20$ .

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**65.** Graph the following equation  $5x + 3y = 15$ .

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**66.** Find the equation of the line passing through the points  $(-1, 7)$  and  $(2, -8)$ . Write the equation in slope-intercept form.

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