



Summer 2026

Dear Honors Algebra 2 Students,

Welcome to Honors Algebra 2! I hope you are enjoying a well-deserved summer break while also taking some time to recharge, relax, and prepare for the exciting school year ahead.

Honors Algebra 2 is a fast-paced and rewarding course that will challenge you to think critically, explain your reasoning clearly, and make connections between different areas of mathematics. Throughout the year, we will build on the algebra and geometry foundations you already know while exploring topics that will prepare you for future courses such as Precalculus, Calculus, Statistics, and beyond.

This course is not simply about getting answers. It is about developing strong mathematical habits: persistence, organization, precision, problem solving, and the ability to communicate your thinking. You will be expected to actively participate, ask questions, and take ownership of your learning.

The attached summer packet is designed to help refresh important Algebra 1 and foundational skills that we will rely on heavily from the very beginning of the year. Please complete the packet carefully and show all work. The goal is not perfection, but preparation. Any topics that feel difficult now are excellent indicators of what you should review before school begins.

A few suggestions for success:

- Do not wait until the last week of summer to begin the packet.
- Show your work neatly and completely.
- Review mistakes and revisit concepts you may have forgotten.
- Focus on understanding patterns and processes, not memorization alone.
- Be prepared to ask questions the first week of class.

Honors Algebra 2 can be demanding, but it is also one of the most important and rewarding math courses in the high school sequence. Students who are willing to stay organized, practice consistently, and embrace challenge often grow tremendously in both skill and confidence over the course of the year.

Enjoy the rest of your summer, and come ready to think, participate, and grow as mathematicians.

Sincerely,

Mrs. Selma Solera-Corbin and Mr. Duane Carr

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Honors Algebra II Summer Work

Complete this either in Notability or on a separate sheet of paper. Either way, include the original problem and every step of your work. Do not use a calculator.

Simplify:

1) $\frac{1}{3}(6x + 18) - 3(4x - 1)$

2) $(3x^2y)(-2xy^3)^2$

3)
$$\frac{18x^4y^3z}{6x^2yz^3}$$

4) $4(x - 5) - 2(3x + 7) + 9$

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

6) $(x + 4)(x - 6)$

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

8) $(x - 3)^2 - (x + 3)^2$

Honors Algebra II Summer Work

Complete this either in Notability or on a separate sheet of paper. Either way, include the original problem and every step of your work. Do not use a calculator.

Solve for x:

$$9) 5(2x - 3) - 4 = 3(x + 6)$$

$$10) \frac{2x-5}{3} = \frac{x+7}{2}$$

$$11) 4 - \frac{x}{3} = \frac{2x+1}{6}$$

$$12) 3(2x - 5) - 2(1 - x) = 4x + 7$$

Solve and check:

$$13) |2x - 7| = 9$$

$$14) |3x + 1| = 2$$

Solve and graph solution on a number line:

$$15) 2x - 5 \leq 3x + 4$$

$$16) 3 - 2x > 7$$

Honors Algebra II Summer Work

Complete this either in Notability or on a separate sheet of paper. Either way, include the original problem and every step of your work. Do not use a calculator.

Evaluate:

$$17) f(x) = 2x^2 - 3x + 1, \text{ find } f(-2)$$

$$18) g(x) = \frac{x+4}{x-1}, \text{ find } g(3)$$

Given $f(x) = x^2$ and $g(x) = 2x - 1$, find:

$$19) f(x) + g(x)$$

$$20) f(x) - g(x)$$

$$21) f(x) \cdot g(x)$$

$$22) \frac{f(x)}{g(x)}$$

Honors Algebra II Summer Work

Complete this either in Notability or on a separate sheet of paper. Either way, include the original problem and every step of your work. Do not use a calculator.

23) If $f(x) = 2x + 3$, find its inverse.

24) Find the domain and range of $g(x) = \sqrt{2x - 5}$. Use interval notation.

25) Find the domain and range of $f(x) = -x^2 - 6x + 14$. Use interval notation.

26) Find the slope of the line through $(2, -3)$ and $(6, 5)$.

27) Write the equation of the line, in slope-intercept form, with slope -2 through $(3, 7)$.

28) Write the equation of the line, in point-slope form, through $(-1, 4)$ and $(5, -2)$.

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29) Write the equation of the line, in standard form, parallel to $y = 3x - 1$ through $(2, 5)$.

30) Write the equation of the line, in slope-intercept form, that is perpendicular to $y = -\frac{1}{2}x + 3$ through $(4, -3)$

Solve systems using substitution or elimination.

31)

$$\begin{aligned} 2x + 3y &= 13 \\ x - y &= 1 \end{aligned}$$

32)

$$\begin{aligned} 3x - 2y &= 4 \\ 2x + y &= 11 \end{aligned}$$

33)

$$\begin{aligned} y &= 2x + 1 \\ y &= -x + 7 \end{aligned}$$

34)

$$\begin{aligned} 2x + y &= 5 \\ y &= x^2 - 1 \end{aligned}$$

Honors Algebra II Summer Work

Complete this either in Notability or on a separate sheet of paper. Either way, include the original problem and every step of your work. Do not use a calculator.

Simplify:

35) $\sqrt{72}$

36) $\sqrt{50x^2}$

37) $\sqrt[3]{216x^3}$

Factor completely:

38) $x^2 + 10x + 21$

39) $4x^2 - 9$

40) $2x^2 - 7x + 3$

41) $6x^2 + 11x - 10$

Honors Algebra II Summer Work

Complete this either in Notability or on a separate sheet of paper. Either way, include the original problem and every step of your work. Do not use a calculator.

Solve for x:

$$42) x^2 - 6x + 8 = 0$$

$$43) 2x^2 - 18 = 0$$

$$44) x^2 + 4x + 1 = 0$$

Challenge:

$$45) 16x^4 - 81 = 0$$

46) A ball is thrown upward with height: $h(t) = -16t^2 + 48t + 5$.

a. Find the maximum height.

b. Determine when the ball hits the ground.

47) What habits or strategies make a student successful in an honors-level math class?