

# Magruder High School Honors Algebra II Summer Review Packet

In order to be successful in Honors Algebra 2, you must have certain prerequisite skills mastered. You will be assessed on the content of this material during the first week of school. This quiz will **not be reassessable**.

The algebra 2 team wants you to give your best effort as you work on this packet. You can work with another person, but keep in mind that each person has to take the quiz. **Please show all of your work**. The answers will be posted on the Magruder website. The hope is that this review will prepare you mathematically for the year ahead and encourage you to think positively about the challenge ahead.

Enjoy your summer! We look forward to meeting you and working with you when you return in the fall.

Honors Algebra 2 Team

Solve each equation or inequality. Check your solution and reduce fractions.  
(Hint: when you multiply or divide each side of an inequality by a negative number, reverse the direction of the inequality symbol.)

1.  $-18 + x = 6$                       2.  $3 = -9x$                       3.  $5x - 2 = 13$

4.  $-(x + 1) = 2(3x - 1)$                       5.  $1 - 2x > x + 10$

6.  $4x - 5(x - 2) = 9x - 14$                       7.  $\frac{4}{5}x - 7 = 16$

8.  $2x > 6$                       9.  $3 - 2x \leq 5$                       10.  $4 \leq 7 + x$

Write an equation of the line that has the given slope and y-intercept.  
(Substitute values into  $y = mx + b$ )

11.  $m = 5, b = -3$                       12.  $m = \frac{3}{5}, b = 6$

Write an equation of the line that passes through the given point and has the given slope.  
(Substitute  $x, y,$  and  $m$  into  $y = mx + b$  and solve for  $b$ . Plug  $m$  and  $b$  into  $y = mx + b$ )

13.  $(5, 2), m = -3$                       14.  $(9, 3), m = -\frac{2}{3}$

Find the slope of the line passing through the two points.  $Slope = \frac{y_2 - y_1}{x_2 - x_1}$ .

15.  $(8, 5), (11, 14)$                       16.  $(-5, 9), (-4, 7)$

Solve the systems by elimination and check the solution.

17.  $\begin{cases} 4x + 2y = 2 \\ 5x - 2y = -11 \end{cases}$                       18.  $\begin{cases} x + 2y = 7 \\ 3x + 5y = 17 \end{cases}$

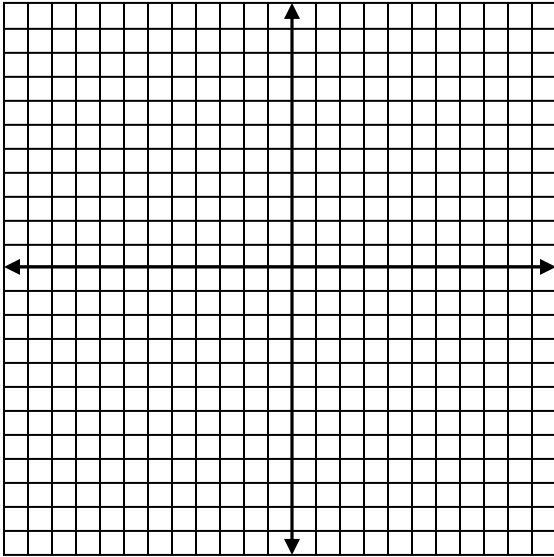
Perform the indicated operation.  
(Add or subtract like terms)

19.  $(2x^2 + 7) + (3x^2 - 8)$                       20.  $(3x^3 + 4x^2 + 7) + (-2x^2 + 3x - 1)$

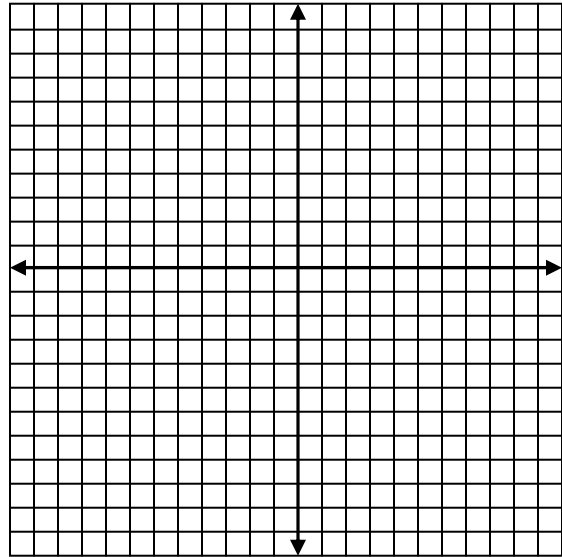
21.  $(x^2 + 6x + 5) - (3x^2 + 2x + 1)$

Graph the equation.

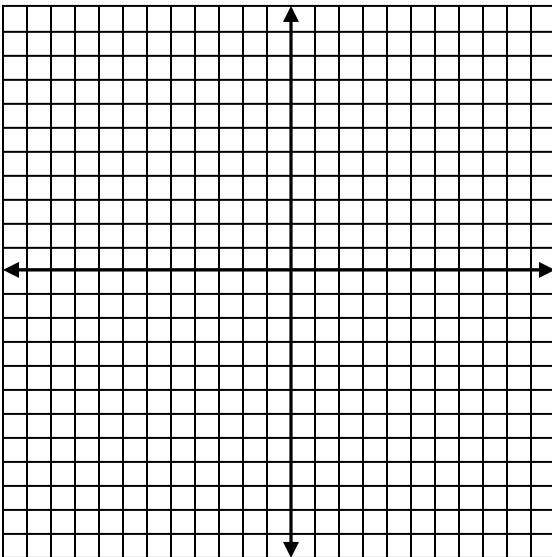
22.  $y = 3x - 1$



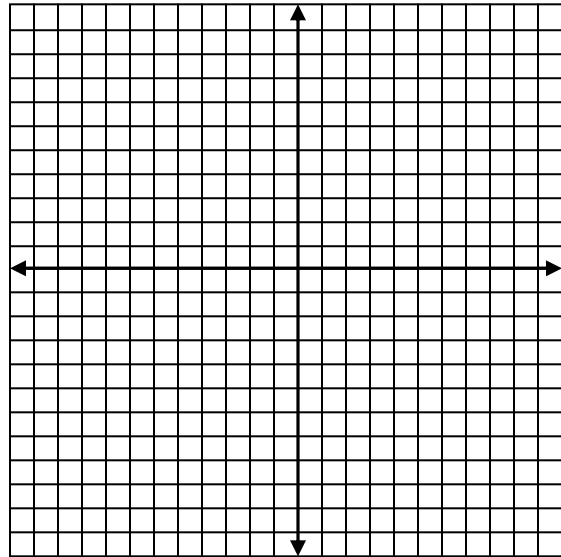
23.  $y = -2x$



24.  $-x + 2y = -8$

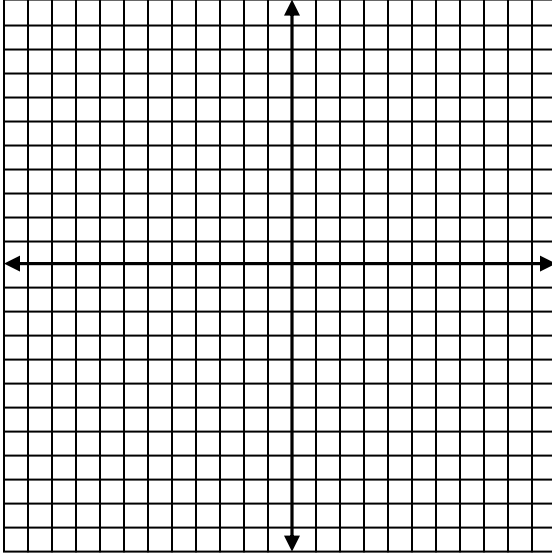


25.  $6x - 3y = -15$

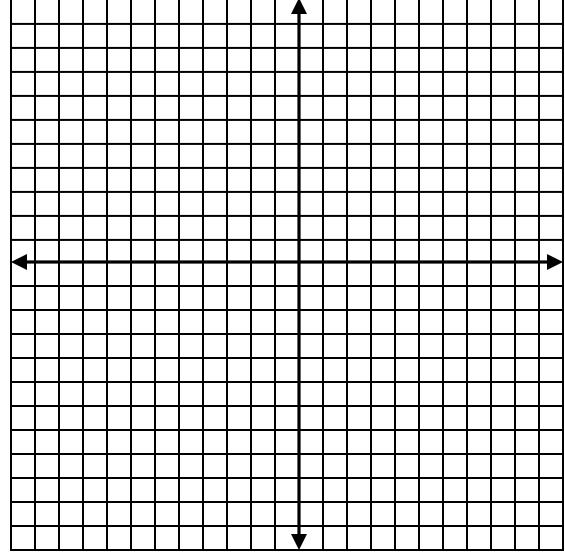


Solve the systems by graphing and check the solution.

26. 
$$\begin{cases} x + y = 3 \\ 2x + y = 4 \end{cases}$$



27. 
$$\begin{cases} x - y = 7 \\ x + y = 3 \end{cases}$$



Solve the equation by factoring.

**Example:**  $x^2 - 7x + 12 = 0$

Step 1: Factor polynomial.  $(x - 4)(x - 3) = 0$

Step 2: Set each factor each to zero.  $x - 4 = 0$        $x - 3 = 0$

Step 3: Solve each equation.  $x = 4, x = 3$

28.  $x^2 - 2x - 3 = 0$

29.  $x^2 - 16 = 0$

30.  $x^2 + 4x = 0$

31.  $x^2 - 6x + 9 = 0$

32.  $x^2 + 3x - 10 = 0$

33.  $5x^2 + 5x - 10 = 0$

Use the quadratic formula to solve the equation. Round all answers to three places after the decimal.

**Quadratic Formula**  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

34.  $x^2 - x - 1 = 0$

35.  $-2x^2 + 3x + 2 = 0$

Simplify using the properties of exponents.

**Properties of exponents**

$$a^m \cdot a^n = a^{m+n} \quad (a^m)^n = a^{mn} \quad a^0 = 1$$

$$(ab)^m = a^m b^m \quad a^{-n} = \frac{1}{a^n}$$

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m} \quad \frac{a^m}{a^n} = a^{m-n}$$

36.  $x^3 \cdot x^5$

37.  $(x^4)^6$

38.  $\frac{x^7}{x^2}$

39.  $\left(\frac{3x}{y}\right)^2$

40.  $x^{-2} \cdot x^{-4} \cdot x^6$

Evaluate the expression. The final answer should be written as a fraction.

41.  $(2^3)^{-2}$

42.  $(9^6)(9^2)^{-3}$

43.  $\frac{7^{-5}}{7^{-3}}$