

Honors Algebra 2 Summer Review Packet

DUE THE FIRST DAY OF SCHOOL

The problems in this packet are designed to help you review topics that are important to your success in Honors Algebra 2. All work must be shown for each problem. The problems should be done correctly, not just tried. You are expected to get each problem correct. Please DO NOT use your calculators to solve these problems. You must know how to do all these problems WITHOUT a calculator.

At the end of the summer, answer keys will be posted on the Poolesville website. If you need help with any of the problems, check the Poolesville web site for links to on-line classes at Montgomery College, which are available to you free of charge.

All work should be completed and ready to turn in on the first day of school. After you have an opportunity to ask questions, you may be quizzed on this material during the first week of school!!

Have fun with the problems!

Honors Algebra 2 Summer Packet

Show all work for all problems.

1. Line l contains the points $(-2, 3)$ and $(1, 5)$.

(a) Determine the slope of the line.

(b) Write an equation for the line.

2. Line k passes through the point $(8, -3)$ and is parallel to the line $y = 3x - 4$. Write an equation for line k .

3. Line m is perpendicular to $y = 4x - 1$ and passes through the origin. What is the equation of line m ?

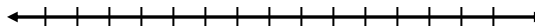
4. Solve the following equations. Show your work and check your answers.

(a) $(x - 1) - (4x + 6) = 8$ (b) $2x - 7x + 4 = 5(4 - 9x)$ (c) $\frac{x - 2}{x + 3} = \frac{5}{6}$

Honors Algebra 2 Summer Review

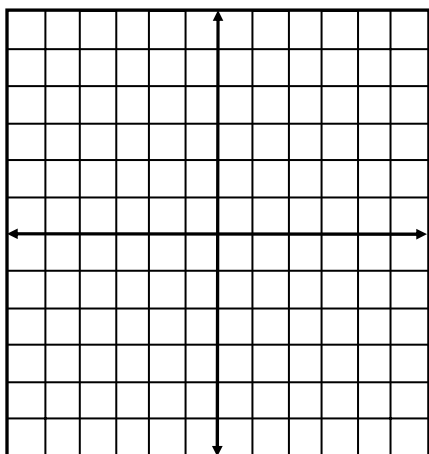
5. Solve the inequality and graph the solution set on a number line:

$$4(t + 2) - 3 \geq 7(t + 5)$$

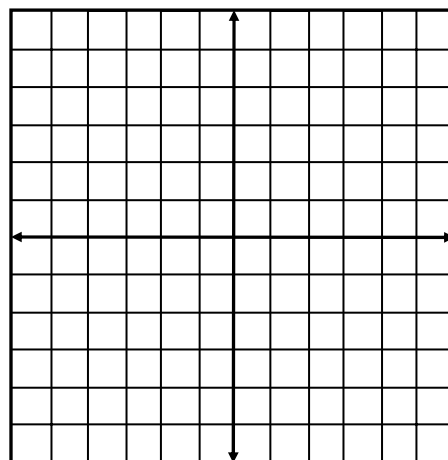


6. Graph the following equations.

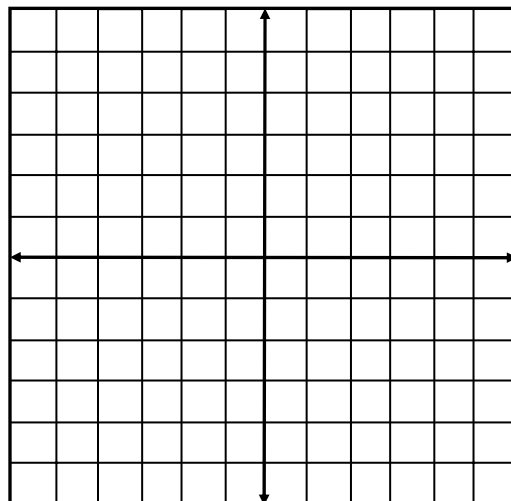
a) $y = 2x - 3$



b) $-2x + 3y = 6$



7. Solve the inequality $6 + 3y < 4(3 - x)$ for y and graph the solution.



Is $(0, -5)$ a solution to the inequality?

Honors Algebra 2 Summer Review

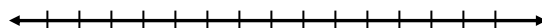
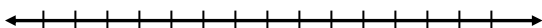
8. Solve the system of equations:

$$\begin{aligned} -x + 3y &= 0 \\ 2x + 6y &= 12 \end{aligned}$$

9. Solve for the variable and graph the solution set on a number line:

(a) $|x - 8| = 3$

(b) $|x + 4| < 2$



10. Simplify the expressions:

(a) $(x^3 + 3x^2 - 2) + (5x^3 + x + 8) - (9x^3 - x^2 + 4)$

(b) $(4x - 3y)(x + 5y)$

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

(d) $\frac{16x^4y - 12x^5y^3}{2x^3y^2}$

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

(f) $2(x^3 - 5x^2 + 6x) - (x^2 + 3x)$

Honors Algebra 2 Summer Review

11. Factor completely:

(a) $9x^2y^3 - 3x^3y^2 - 15xy$

(b) $2x^2y - 4xy - 30y$

(c) $x^2 - x - 30$

(d) $4x^2 - 81$

(e) $x^3 + 4x^2 + 3x$

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

12. Solve the quadratic equations:

(a) $x^2 + x - 42 = 0$

(b) $(x - 2)^2 = 25$

(c) $6x^2 - 13x = -6$

13. Simplify:

(a) $x^3 \cdot x^2 \cdot x$

(b) $(m^3)^5$

(c) $(y^{-2})^{-3}$

(d) $\frac{a^4}{a^7}$

(e) $\frac{3xy^5}{12x^2y^0}$

(f) $\left(\frac{2}{3}\right)^3$

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

(h) $(8a^3b^2)(2a^{-4}b^{-5})$

(i) $\frac{3x^3y^2}{6x^{-2}y^{-1}}$

Honors Algebra 2 Summer Review

14. If y varies directly with x and $y = 6$ and $x = -3$, find y when $x = 4$.

15. A car salesman's weekly salary is a base amount plus an additional amount for each car sold. The table below shows a person's weekly salary earned for the last three weeks.

Cars sold (c)	Weekly salary (S)
4	\$500
9	\$1000
12	\$1300

What is the person's weekly salary when 13 cars are sold? Justify your answer.

16. For each equation, identify the vertex, the axis of symmetry, and indicate whether the parabola opens up or down. Vertex form of the parabola is $y = a(x - h)^2 + k$ where (h, k) are the coordinates of the vertex and the axis of symmetry is $x = h$.

	Vertex	Axis of symmetry	Opens
a) $y = 2(x - 2)^2 - 3$	_____	_____	_____
b) $y = -2x^2 - 3$	_____	_____	_____

Honors Algebra 2 Summer Review

17. Sketch a graph of $f(x) = x^2 - x - 2$. Then complete the characteristics below.

Domain:

Range:

Axis of Symmetry:

Increases:

Decreases:

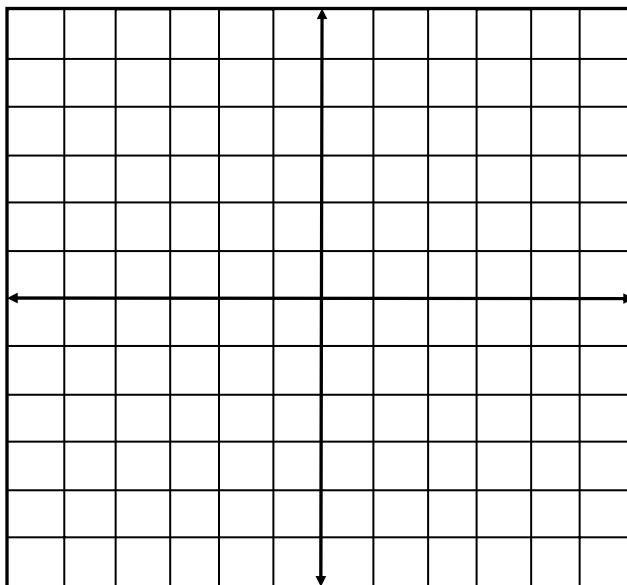
x-intercepts:

y-intercept:

Minimum Value:

Maximum Value:

Continuous:



18. Find the values of x and y .

