Dear Future Honors Algebra 2/Trig Student,

Congratulations on your enrollment in Honors Algebra 2/Trig! Attached you will find the summer review. Take the time to look over the skills in it and use the review for practice. The answers are attached so that you can check your work. When you find yourself unable to answer a question, do not skip it – research it. That research can be in the form of a parent, a friend, free on-line help like brightstorm.com and khanacademy.org, or your old Algebra 1 notes. The websites are user-friendly and offer excellent explanations. Definitely check them out as a resource.

You learned most of the skills in middle school and some in Algebra 1. So brush up on these skills, and we will be ready to start our work in Algebra2/Trig Honors. When you return to school, feel free to ask specific questions pertaining to the summer review within the first few days. The Honors Algebra 2/Trig teachers are here to help. There will be an assessment given in the first two weeks of school.

So use the summer to refresh and renew and review! We look forward to meeting you. Go Tillers!
Solve each equation.

1) \( |6p| - 6 = 0 \)  
2) \( |a - 1| + 2 = 4 \)

Simplify each expression.

3) \(-5(2 - 5n) - 2(5 - 8n)\)  
4) \(-6(k - 8) - 6(2k + 3)\)

Solve each equation.

5) \(2(-b - 7) + 1 = -3(1 - b)\)  
6) \(3(3r - 3) - 4 = 3(r - 8) - 1\)

Solve each proportion.

7) \(\frac{4}{x - 3} = \frac{8}{x - 10}\)  
8) \(\frac{8}{5} = \frac{3a + 7}{7a + 3}\)

Simplify. Your answer should contain only positive exponents.

9) \(\frac{a^{-1}b^4}{-2a \cdot (a^{-4}b^2)^{-3}}\)  
10) \(\frac{2x^0 y^2 \cdot (-2y^3)^0}{x^{-2} y^4}\)

11) \(\frac{(y^3)^2 \cdot 2uv}{(-y^{-2})^4}\)  
12) \(\frac{(-y \cdot 2y^3)^{-1}}{-2x^3 y^3}\)

Factor the common factor out of each expression.

13) \(-36n - 16n^2 - 36n^4\)  
14) \(-36x^3 - 81x^2 - 90x\)

15) \(27 + 81x + 45x^2\)  
16) \(-40n + 20n^2 - 50n^4\)
Draw a graph for each inequality.

17) \( r > -6 \)

18) \( -n \leq -2 \)

19) \( p < 4 \)

20) \( -n \leq 1 \)

Solve each inequality and graph its solution.

21) \(-40 - 2p > 6(p - 7) - 6\)

22) \(38 - 8v < 6(-8v - 7)\)

23) \(7(-5m + 3) + 2 > 23 + 8m\)

24) \(7(7 - 3b) < -2b - 27\)

Sketch the graph of each line.

25) \(x\)-intercept = 2, \(y\)-intercept = 4

26) \(x\)-intercept = -1, \(y\)-intercept = 3
27) \(2x - y = 3\)

28) \(y = -\frac{1}{3}x + 5\)

29) \(-4y + 3x = -8\)

30) \(-3 = -y\)

Sketch the graph of each linear inequality.

31) \(x - 2y < -2\)
32) \( y \geq \frac{3}{2}x + 4 \)

Solve each system by graphing.

33) \( x - 2y = 6 \)
\( 3x - 2y = 2 \)

34) \( y = -x - 4 \)
\( y = \frac{5}{2}x + 3 \)
Sketch the solution to each system of inequalities.

35) \( y > 4x + 2 \)
\( y \geq -x - 3 \)

36) \( y \geq -x + 1 \)
\( y \leq \frac{1}{2}x - 2 \)

Write the slope-intercept form of the equation of each line.

37) 

38) 

39) \( 2x + y = -6 \)

40) \( 4x - 3y = -24 \)

Write the slope-intercept form of the equation of the line through the given point with the given slope.

41) through: \((3, 5)\), slope = \(\frac{1}{2}\)  

42) through: \((5, 1)\), slope = \(-\frac{1}{5}\)

Write the slope-intercept form of the equation of the line through the given points.

43) through: \((4, 0)\) and \((-5, 5)\)

44) through: \((1, 5)\) and \((0, -4)\)
Write the slope-intercept form of the equation of the line described.

45) through: \((1, 3)\), parallel to \(y = 4x + 3\)  
46) through: \((-1, -4)\), perp. to \(y = -\frac{1}{5}x + 3\)

Find each product.

47) \((2m + 6n)(2m + 7n)\)  
48) \((8x - 8y)(5x - 5y)\)

Simplify.

49) \(\sqrt{2}(4\sqrt{2} + 5)\)  
50) \(\sqrt{5}(\sqrt{5} + 2\sqrt{2})\)

Simplify each expression.

51) \((-5x - 2x^3 - 2x^4) + (-x^4 - 5x^3 - 8x)\)  
52) \((-2p^3 - 3p^4 - 8p^2) - (-7p^4 - p^3 - 3)\)

Solve each system by elimination.

53) \(4x - 3y = -11\)  
\(8x - 7y = -23\)  
54) \(-7x - 12y = 7\)  
\(-3x - 4y = 3\)

Factor each completely.

55) \(4n^2 - 9\)  
56) \(r^2 - 9\)

57) \(n^2 - 2n + 1\)  
58) \(x^2 - 6x - 40\)

59) \(r^2 + 13r + 36\)  
60) \(5k^2 + 35k - 90\)

61) \(8v^2 + 6v - 5\)  
62) \(4p^2 + 12p - 27\)
Answers to Essentials for Algebra 2/Trig Honors

1) \{1, -1\}  
2) \{3, -1\}  
3) \{-20 + 41n\}  
4) \{-18k + 30\}  
5) \{-2\}  
6) \{-2\}  
7) \{-4\}  
8) \{\frac{11}{41}\}  
9) \frac{b^{10}}{2a^{14}}  
10) \frac{2x^2}{y^2}  
11) 2v^{15}u  
12) \frac{x^3}{y}  
13) -4n(9 + 4n + 9n^3)  
14) -9x(4x^2 + 9x + 10)  
15) 9(3 + 9x + 5x^2)  
16) 10n(-4 + 2n - 5n^3)  
17) \[\begin{array}{c|c|c|c|c|c|c|c|c} -7 & -6 & -5 & -4 & -3 & -2 & -1 & 0 & 1 \\
\hline
-7 & -6 & -5 & -4 & -3 & -2 & -1 & 0 & 1 
\end{array}\]  
18) \[\begin{array}{c|c|c|c|c|c|c|c|c} -7 & -6 & -5 & -4 & -3 & -2 & -1 & 0 & 1 \\
\hline
-7 & -6 & -5 & -4 & -3 & -2 & -1 & 0 & 1 
\end{array}\]  
19) \[\begin{array}{c|c|c|c|c|c|c} -7 & -6 & -5 & -4 & -3 & -2 & 0 \\
\hline
-7 & -6 & -5 & -4 & -3 & -2 & 0 
\end{array}\]  
20) \[\begin{array}{c|c|c|c|c|c|c} -7 & -6 & -5 & -4 & -3 & -2 & 0 \\
\hline
-7 & -6 & -5 & -4 & -3 & -2 & 0 
\end{array}\]  
21) \(p < 1\): \[\begin{array}{c|c|c|c|c|c|c} -7 & -6 & -5 & -4 & -3 & -2 & 0 \\
\hline
-7 & -6 & -5 & -4 & -3 & -2 & 0 
\end{array}\]  
22) \(v < -2\): \[\begin{array}{c|c|c|c|c|c|c} -7 & -6 & -5 & -4 & -3 & -2 & 0 \\
\hline
-7 & -6 & -5 & -4 & -3 & -2 & 0 
\end{array}\]  
23) \(m < 0\): \[\begin{array}{c|c|c|c|c|c|c} -7 & -6 & -5 & -4 & -3 & -2 & 0 \\
\hline
-7 & -6 & -5 & -4 & -3 & -2 & 0 
\end{array}\]  
24) \(b > 4\): \[\begin{array}{c|c|c|c|c|c|c} -7 & -6 & -5 & -4 & -3 & -2 & 0 \\
\hline
-7 & -6 & -5 & -4 & -3 & -2 & 0 
\end{array}\]  
25)  
26)  
27)  
28)  
29)  
30)  
31)  
32)  
33) \((-2, -4)\)  
34) \((-2, -2)\)  
35)  
36)
37) \( y = -\frac{9}{5}x - 5 \)  
38) \( y = \frac{2}{3}x \)  
39) \( y = -2x - 6 \)  
40) \( y = \frac{4}{3}x + 8 \)  
41) \( y = \frac{1}{2}x + \frac{7}{2} \)  
42) \( y = -\frac{1}{2}x + 2 \)  
43) \( y = -\frac{5}{9}x + \frac{20}{9} \)  
44) \( y = 9x - 4 \)  
45) \( y = 4x - 1 \)  
46) \( y = 5x + 1 \)  
47) \( 4m^2 + 26mn + 42n^2 \)  
48) \( 40x^2 - 80xy + 40y^2 \)  
49) \( 8 + 5\sqrt{2} \)  
50) \( 5 + 2\sqrt{10} \)  
51) \( -3x^4 - 7x^3 - 13x \)  
52) \( 4p^4 - p^3 - 8p^2 + 3 \)  
53) \( (-2, 1) \)  
54) \( (-1, 0) \)  
55) \( (2n + 3)(2n - 3) \)  
56) \( (r + 3)(r - 3) \)  
57) \( (n - 1)^2 \)  
58) \( (x + 4)(x - 10) \)  
59) \( (r + 4)(r + 9) \)  
60) \( 5(k + 9)(k - 2) \)  
61) \( (4v + 5)(2v - 1) \)  
62) \( (2p - 3)(2p + 9) \)