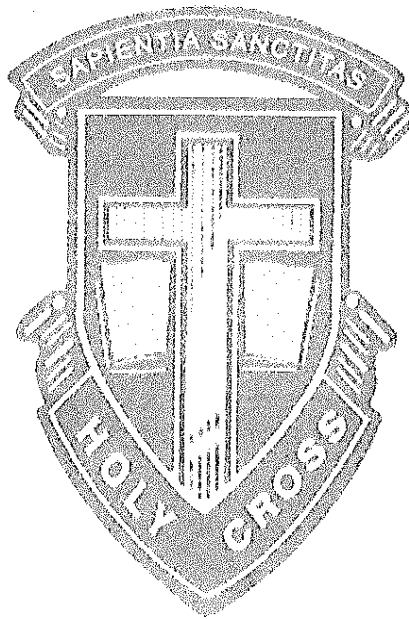


Algebra 2/Trig

Course Review Packet



Directions:

This review packet is to be completed by all students who are enrolled in Algebra 2/Trigonometry. The completed packet must be submitted to your teacher on the Monday of the first full week of class. The packet will be used as the first assessment for the Honors Algebra I course.

Name _____

Algebra Review Packet

The problems in this packet are intended to review what you should already know from an Algebra I Course. The skills selected are those that we will be using in the study of Algebra II and Trigonometry. If you get stuck on any question you can ask another mathematics teacher for assistance or research the information on the Internet. This background information will appear at various times throughout this course and you will be expected to know it.

Part I: Polynomial Simplification

Simplify completely

1. $x^4 \cdot x^5$
2. $(4j^2k^4l)(2j^3kl^8)$
3. $20x^2y^3(x^3 - 7y^3)$
4. $6x^2(x^4 - 2)$
5. $(9x^2y^3)^5$
6. $(4cd^2)(3c^2d^3)^2$
7. $(4ab^2c)^3(3a^2b)^2$
8. $\frac{x^5}{x^3}$
9. $\frac{a^2bc^4}{ab^5c^2}$
10. $\frac{x^{-2}y^{-1}z}{x^2y^{-1}z^{-3}}$
11. $\frac{k^3l^{-1}m^{-2}}{k^4l^2m^{-2}}$
12. $(x^{-2}yz^3)(x^2y^{-4}z^{-2})$
13. $\left(\frac{x^2}{y^3}\right)^{-2}$
14. $(5^{-2}a^{-2}b^4c)(5^{-3}a^4b^3c^{-2})$
15. $\left(\frac{6x^2y^{-1}}{3x^3y}\right)^{-3}$
16. $2x^3 + 4x^2 + 3x - 3x^2 + 4x - 5x^3$
17. $(3x^2 + 3xy - 4y^2) - (2y^2 + 5yx - 3x^2)$
18. $x + 2y + 3xy + 4y - 5x$
19. $(3x^2 + 2xy - 4y^2) - (3y^2 + 5x^2 - xy)$
20. $2a^2b + 3a^3 - 5ab^2 + 7a^2b - b^3 + 6ab^2$
21. $(10x + 9y) + (5x^2 + 5xy - y^2)$
22. $2x(2x^2 - 2xy^2 + 3x^3y)$
23. $(2x + 3y)(2x + 3y)$
24. $(4x + 2)(3x - 4)$
25. $(3x - y)(3x + y)$
26. $(5a + 2b)(2a + 3ab - 6b)$
27. $(x + y)^2$
28. $(2x - 3y)^2$
29. $(3x + 2y)^3$
30. $(4x - 5y)^3$

Part II: Solving equations and inequalities

Part A. Solve for the given variable. Be sure to show your answer check.

$$31. 28 = 7 + 3x$$

$$32. \frac{3}{4}x - 5 = -5$$

$$33. \frac{2}{3} + \frac{1}{6}q = \frac{5}{6}q + \frac{1}{3}$$

$$34. -9 - 3(2q - 1) = -18$$

$$35. 8 = \frac{2 + 9y}{7}$$

$$36. \left| -\frac{1}{2}b - 2 \right| = 10$$

$$37. 3(5y + 2) - y = 2(y - 3)$$

$$38. 2|x + 3| + 5 = 11$$

$$39. 3|2x - 5| + 6 = -3$$

$$40. \frac{4}{|p|} + 12 = 14$$

Part B. Solve for the given variable and determine if the answers are unique solutions, no solution, or infinitely many solutions. (4 points each)

$$41. 6 - 2(n + 3) = -2n$$

$$42. \frac{1}{2}(16v - 10) = 5 + 8v$$

$$43. 2[5(w + 3) - (w + 1)] = 3(1 + w)$$

Part C: Literal Equations

Solve for the variable given after the ; (4 points each)

$$44. W = 3vq + r ; q$$

$$45. s = vt + 6q^2 ; v$$

$$46. A = P(Q + rt) ; t$$

$$47. m = \frac{x + y + z}{2} ;$$

$$48. v^2 = u^2 + 2as ; u$$

$$49. C = \frac{5}{9}(F - 32); F$$

Part III: Radicals

Please simplify the following radical expressions completely.

$$50. \sqrt{196}$$

$$51. \sqrt[3]{729}$$

$$52. \sqrt{16a^2}$$

$$53. \sqrt[3]{64b^3c^9}$$

$$54. \sqrt{54}$$

$$55. \sqrt{448}$$

$$56. \sqrt[3]{-250}$$

$$57. \sqrt[3]{1372}$$

$$58. \sqrt[4]{243}$$

$$59. \sqrt{12a^3}$$

$$60. \sqrt{288a^3bc^4}$$

$$61. \sqrt[3]{24a^4}$$

$$62. \sqrt[3]{250x^2y^4z^8}$$

$$63. \sqrt{-8}$$

$$64. \sqrt{\frac{3}{5}}$$

$$65. \sqrt{\frac{3}{9}}$$

(Algebra II should begin with simplifying radicals)

Part IV: Factoring

Please factor the following expressions completely.

$$66. 31500$$

$$67. 22932$$

$$68. t^2 + 8t + 16$$

$$69. 4x^3 - 4x$$

$$70. 2x^2 + 6x - 20$$

$$71. 2x^2 + 4x$$

$$72. 3x^2 - 16x - 12$$

$$73. x^2 + 10x + 25$$

74. $8x^3 - 2x$ 75. $10x + 3x^2 + 8$ 76. $3x^2 + 4x$ 77. $-6x^2 + x + 15$
78. $4 + 25x^2 - 20x$ 79. $34x^2 - 39 - 25x$ 80. $24x^3 - 22x^2 - 10x$
81. $13x^2 - 10 - 21x$ 82. $17x + 40x^2 - 12$ 83. $x^2 + 3x - 40$
84. $6x^2 - 5x - 25$ 85. $16x^2 - 4$ 86. $81y^2 - 9$
87. $-12x^5 + 125x$ 88. $1000x^3 + 1$ 89. $y^3 + 64x^3$
90. $x^3 - 8$ 91. $-8x^3 + 27y^3$ 92. $4t^2 + 4t + 1$
93. $x^3 - x^2 + 2x - 2$ 94. $x^2 + x - 2$ 95. $5x^2 + 26x + 5$
96. $6 + 2x - 3x^3 - x^4$ 97. $y^3 - 8$ 98. $x^2 + 5x + 4x + 20$
99. $5y^2 + 4 + 2y + 10y$ 100. $ax^2 - bx^2 + ay - by$

Part V: Rational Expressions

Simplify the following Rational Expressions. Restrict the domain where needed.

101. $\frac{12 + x - x^2}{2x^2 - 9x + 4}$ 102. $\frac{6x^2 + 4x}{2x^2 + 4x}$ 103. $\frac{y^2 + 3y + 2}{y^2 - 1}$
104. $\frac{10x^2 - 25xy + 15y^2}{7x^2 + 7xy - 14y^2}$ 105. $\frac{(x - y)^2}{x + y} \cdot \frac{3x + 3y}{x^2 - y^2}$
106. $\frac{2x^2 + x - 6}{x^2 + 4x - 5} \cdot \frac{x^3 - 3x^2 + 2x}{4x^2 - 6x}$ 107. $\frac{t^2 - t - 6}{t^2 + 6t + 9} \cdot \frac{t + 3}{t^2 - 4}$
108. $\frac{x^2 - 36}{x} \div \frac{x^3 - 6x^2}{x^2 + x}$ 109. $\frac{x^2 - 36}{x} \div \frac{x^3 - 6x^2}{x^2 + x}$
110. $\frac{x^2 + 7x + 10}{2x - 4} \cdot \frac{x - 2}{x^2 - 3x - 10}$ 111. $\frac{3}{8a} + \frac{5b}{3a^2} - \frac{2a}{9b}$
112. $\frac{x + 1}{x^2 - 9} + \frac{1}{x + 3}$ 113. $\frac{x}{x^2 - 6x + 8} - \frac{x}{x^2 - 5x + 4}$

Part VI: Systems

Solve the following two variable systems by substitution.

114.
$$\begin{cases} 2x + 3y = 0 \\ x - 6y = 5 \end{cases}$$

115.
$$\begin{cases} 3y + 5x = 7 \\ x - 4y = 6 \end{cases}$$

Solve the following two variable systems by elimination

116.
$$\begin{cases} 3x - 8y = 34 \\ 7x + 4y = -34 \end{cases}$$

117.
$$\begin{cases} 2x - 7y = 41 \\ 6x + 5y = -7 \end{cases}$$

118.
$$\begin{cases} 3x + y = 4 \\ x - 2y = 6 \end{cases}$$

119.
$$\begin{cases} 2x + 5y = 14 \\ 6x + 7y = 10 \end{cases}$$

Part VII: Graphing

Part A: Understanding concepts and vocabulary. Please answer the following questions with the appropriate response.

120. What is slope? (Explain in words.)

121. What are two mathematical equivalencies for slope? (Give answers as mathematical statements)

122. What are intercepts? Give examples of all types of intercepts.

123. What does the graph of a linear equation represent?

124. What does it mean when two lines are parallel? (Explain in words)

125. What does it mean when two lines are perpendicular? How can one tell if two lines are perpendicular for sure?

126. Why does the Slope formula not work for vertical lines? Explain

Part II: Graphing

Graph by using H chart (point plotting)

129. $2x + 5y = 10$

130. $3x - 4y = 8$

Graph by using slope intercept

130. $2y + 3x = 18$

131. $5y - x = 12$

Part C: Linear Equations

Find the following equations of the line: Make sure each equation is written in standard form.

132. Line that runs through points $(-2, 3)$ and $(-4, 5)$
133. Line that runs through point $(5, -2)$ and has slope of 0.
134. A line with the intercepts of $(0, 5)$ and $(-7, 0)$
135. A line that runs through points $(-1, 2)$ and $(-1, 3)$

Part D: Algebra in Graphing. Solve and determine the missing information.

136. Consider three points, $(4, 5)$, $(-5, 2)$ and $(9, p)$ on the same line. Find the value of p . Be sure to show all work.

137. If the line through $(-3, 4)$ and $(6, d)$ is perpendicular to the graph $4x + 3y = 15$, what

Part VIII: Word Problems

Please answer the following word problems. Be sure to identify your variables, show your equation, solve your equation, check your result and answer the question being asked.

138. James worked 2 hours daily after school, Monday through Friday. On Saturdays he works 8 h at \$2 more per hour than on weekdays. If he makes \$142 per week, how much does he work per hour on weekdays?
139. The Eiffel Tower is 497 ft taller than the Washington Monument. If each of the monuments were 58 ft shorter, the Eiffel Tower would be twice as tall as the Washington Monument. How tall is each?
140. The sum of three consecutive integers is double the largest number. What are the numbers?
141. It took John 2.5 hours to run from Cinnaminson to Burlington Township at a constant speed. The return trip only took 2 hours because he increased her speed by 3 km/h. How fast was she running from Cinnaminson to Burlington Township?
142. A rectangular garden is twice times as long as it is wide and is surrounded by a brick walk 1.5m wide. Find the dimensions of the garden if the area of the walk is 171 m^2 .

143. Mrs. Jones had driven for 2 hours at a constant speed when road repairs forced him to reduce his speed by 10 mi/h for the remaining hour of the 152 mi trip. Find Mrs. Jones' original speed.

144. A house has two rooms of equal area. One room is square and the other room is a rectangle 5 ft narrower and 6ft longer than the square one. Find the area of each room

145. You rent a car for \$37.50 per day and \$0.37 per mile. You keep the car for 8 days and drive it for 325 kilometers. Model the total cost with a linear equation and use the equation to determine the total cost.

146. Tim drives west into a headwind from St. Louis, Missouri to Denver, Colorado, a distance of 840 miles. This trip took him fourteen hours of drive time. On his return, he faced an equally strong tailwind and cut time back to St. Louis by two hours. What was the actual speed of the car without the wind and the wind speed?

147. A sailboat travels 12 mi downstream in only 2 h. The return trip upstream takes 3 h. Find the speed of the sailboat in still water and the rate of the current.