

Algebra II Final Exam Review 2018

The following problems will be **graded** as part of your exam score. They are due on your exam date, however, we will go over questions in class a few days before the exam. **SHOW ALL WORK!!!**

Convert each:

1. 18 yards to feet
2. 60 mph to feet per second
3. 2000 square inches to square feet

Simplify each.

4. $15 - 3 * 8 \div 2$
6. $15 - 3 * (8 \div 2)^2$
8. $15 - 3(8 - 2)^2$
5. $(15 - 3) * 8 \div 2$
7. $15 - 3(8 - 2)$

Solve each equation or inequality.

9. $3x - 8 = 19$
12. $5(x - 8) - 4(2x - 3) = 11$
15. $|2x - 3| = 17$

10. $\frac{2}{3}x - 5 = 1$
13. $3 < 2x - 1 < 8$
16. $|2x - 3| = 0$

11. $5x + 4x - 3 = 11 - 5x$
14. $|x| = 4$
17. $|x - 3| < 5$

$$18. |x-3| \geq 10$$

$$19. \frac{x}{3} = \frac{2x+1}{4}$$

$$20. \frac{3}{2}x + \frac{2}{3} = \frac{7}{2}x + \frac{1}{6}$$

Solve each system of equations. (Find the point of intersection.)

$$21. \begin{aligned} y &= 2x - 1 \\ y &= x + 5 \end{aligned}$$

$$23. \begin{aligned} 2x + 3y &= 7 \\ 3x - 3y &= 8 \end{aligned}$$

$$22. \begin{aligned} y &= 3x - 4 \\ -2x + 3y &= 9 \end{aligned}$$

$$24. \begin{aligned} 4x - 3y &= 2 \\ 8x - 6y &= 17 \end{aligned}$$

Find the slope and y intercept of each line.

$$25. y = 5x - 2$$

$$26. 2x - y = 2$$

$$27. y = 5$$

$$28. 5x + 6y = 12$$

Find the equation of the line given:

$$29. m = -1 \text{ \& } b = 5$$

$$30. m = \frac{3}{4} \text{ \& } (1, -5)$$

$$31. (3, -8) \text{ \& } (8, 2)$$

Find the equation of the inverse function.

32. $y=3x-12$

33. $y = \frac{2x-5}{6}$

34. $y = \frac{-3}{4}x + 5$

Simplify each. No decimals or negative exponents.

35. 5^0

46. $(3x^2y^5)^2$

36. 4^3

42. 2^{-5}

37. $(-8)^2$

47. $5x^3y^5 * 9x^4y$

38. -8^2

43. $\left(\frac{5}{2}\right)^{-3}$

39. $\left(\frac{4}{5}\right)^2$

44. $x^3 * x^4$

48. $\frac{15x^8y^3w}{35xy^7w}$

40. $\left(\frac{4}{5}\right)^{-2}$

45. $\frac{x^{11}}{x^3}$

49. $(4x^3y^{-5})^3$

41. 5^{-3}

Find the mean, median, mode, upper and lower quartiles of the following group of numbers.

50. 10, 12, 7, 11, 20, 7, 6, 8, 9

Find each:

51. $6!$

52. ${}_8P_3$

53. ${}_8C_3$

Solve each:

54. What is the **probability** of picking a blue marble from a box containing 3 red, 4 green and 2 blue marbles?
55. What are the **odds** of picking a blue marble from a box containing 3 red, 4 green and 2 blue marbles?
56. What is the probability of picking a blue marble and then a red marble from a box containing 3 red, 4 green and 2 blue marbles? (no replacement)

Simplify each. No decimals.

- | | | |
|------------------------------|---------------------|---------------------------------|
| 57. $\sqrt{64}$ | 62. $(3\sqrt{5})^2$ | 67. $27^{\frac{1}{3}}$ |
| 58. $\sqrt{52}$ | 63. $\sqrt[3]{8}$ | 68. $81^{\frac{3}{4}}$ |
| 59. $5\sqrt{2} - 7\sqrt{18}$ | 64. $\sqrt[4]{81}$ | 69. $81^{\frac{-3}{2}}$ |
| 60. $\sqrt{\frac{5}{3}}$ | 65. $\sqrt[3]{40}$ | 70. $\sqrt[3]{250x^{12}w^{19}}$ |
| 61. $3\sqrt{5} * 4\sqrt{10}$ | 66. $\sqrt[4]{80}$ | |

Factor each completely:

- | | |
|------------------|-----------------------|
| 71. $x^2 - 25$ | 74. $x^2 - 11x + 28$ |
| 72. $x^4 - 16$ | 75. $2x^2 - 11x - 21$ |
| 73. $5x^2 - 35x$ | 76. $4x^2 + 16x - 20$ |

77. $8x^3 + 27$

78. $x^3 - x^2 + 5x - 5$

Solve each:

79. $x^2 = 81$

82. $2x^2 - 5x - 3 = 0$

84. $\sqrt{3x+1} = 5$

85. $\sqrt[3]{2x-1} = 3$

80. $x^2 - 7x + 12 = 0$

83. $x^2 + 4x + 9 = 0$

86. $\sqrt{2x} = x - 4$

81. $3x^2 - 6x - 8 = 0$

Simplify each. (add, sub, dist, or mult):

87. $3x + 4x - 4x + x$

90. $6(3x-2) - 4(5x+8)$

93. $(3x-8)^2$

88. $(3x-2) - (5x+8)$

91. $-3x^3(5x^2 - 4x + 7)$

94. $(3x-2)^3$

89. $(3x-2)(5x+1)$

92. $(x+3)(x^2+5x-7)$

95. X & y vary directly. If $x=3$ when $y=8$, find x when $y=30$.

96. X & y vary inversely. If $x=3$ when $y=8$, find x when $y=30$.

Simplify each rational expression.

97. $\frac{3}{x+4} * \frac{x+4}{3}$

99. $\frac{x^2-9}{5x+10} \div \frac{x-3}{5x^2-20}$

98. $\frac{x^2-x-12}{7+x} * \frac{x^2-49}{20x-5x^2}$

100. $\frac{x+5}{x-5} - \frac{3}{x+5}$

Given $f(x) = x^2 - 4x + 5$ & $g(x) = x - 7$ find each of the following:

101. $f(0)$

105. $f(x) + g(x)$

109. $g(f(8))$

102. $f(3)$

106. $f(3w)$

110. $g(f(x))$

103. $f(-3)$

107. $f(x+2)$

111. $f(g(x))$

104. $g(-9)$

108. $f(g(8))$

Find the slope, distance and midpoint of the given 2 points.

112. $(3,6)$ & $(4,8)$

113. $(-3,5)$ & $(-1,-11)$

114. Given a right triangle with sides x and $x+3$ and hypotenuse 10, find the lengths of the sides.

Graph each on graph paper. Include *at least 2* ordered pairs each.

115. $y = x$

119. $y < -2x + 1$

123. $y = -x^2$

116. $y = .5x - 1$

120. $-2 < x < 3$ & $-5 < y < 3$

124. $y = x^2 + 2$

117. $y = -3x + 4$

121. $y = 3$

125. $y = 2x^2$

118. $3x + 4y = 12$

122. $y = x^2$

126. $y = (x-1)^2 - 4$



