

Final Exam:

Day 1: (June 10)

Right Triangle Trig

Pythagorean Theorem

Special Right Triangle Trig ($30^\circ, 45^\circ, 60^\circ$) and Quadrantal Angles ($0^\circ, 90^\circ, 180^\circ, 270^\circ$)

Right Triangle Word Problems

Proportions

Day 2: (June 11)

All Factoring

Linear Equations

Solving Quadratics:

- Factoring

- Quadratic Formula

- Completing the Square

Day 3: (June 12)

Multiplying Monomials and Polynomials

Imaginary Numbers

Absolute Value Equations

Radical Equations

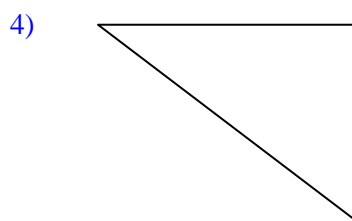
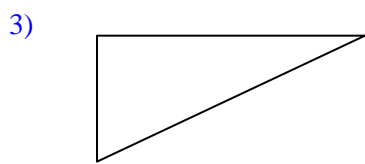
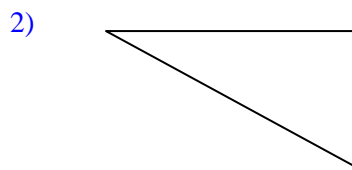
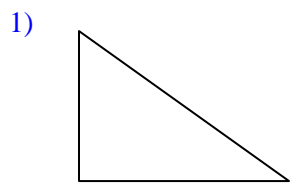
Rational Expressions

Rational Equations

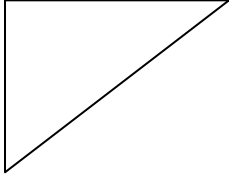
Final Exam

Day 1:

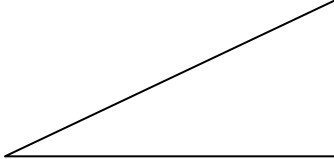
Right Triangle Problems *(Numbers for pages 1 and 2 are posted as a separate file.):*



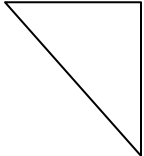
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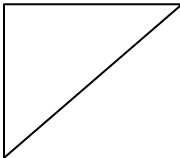
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7)



8)



Special Right Trig:

9) $\cos 90^\circ =$

10) $\tan x = 1$

11) $\sin 240^\circ =$

12) $\tan 120^\circ =$

13) $\sin x = 0$

14) $\cos x = -\frac{1}{2}$

15) $\cos 135^\circ =$

16) $\tan x = 0$

17) $\sin 315^\circ =$

18) $\tan 225^\circ =$

19) $\sin x = -\frac{1}{2}$

20) $\cos x = -1$

21) $\cos x = \frac{\sqrt{2}}{2}$

22) $\tan 0^\circ =$

23) $\sin 135^\circ =$

24) $\cos 120^\circ =$

25) $\tan x = -\frac{\sqrt{3}}{3}$

26) $\sin x = 1$

Right Triangle Word Problems:

27) An eagle flies 15 miles north and then 36 miles west. How far is the bird from the starting point?

28) A boy is sitting on the floor flying a kite. He has 400 feet of string. The angle of elevation is 62° . How high is the kite?

29) An apple tree casts a 31-foot shadow. If the angle of depression is 36° , how tall is the tree?

30) A bird is perched on top of a 14-foot oak tree. It sees a piece of bread on the ground, 48 feet from the base of the tree. How far will the bird have to fly to get the piece of bread?

31) A 18-foot ladder is leaning against a building. The base of the ladder is 7 feet away from the base of the building. Find the angle of elevation created by the ladder.

Proportions:

$$32) \frac{x+11}{13} = \frac{2}{x}$$

$$33) \frac{4x-2}{12} = \frac{8x-1}{15}$$

$$34) \frac{x+10}{2x-15} = \frac{x-4}{x+6}$$

$$35) \frac{x-6}{x+9} = \frac{2x-6}{x+11}$$

Day 2:

Factoring:

Factor Each Completely:

36) $x^2 - 5x - 66$

37) $x^2 + 11x - 12$

38) $12x^2 - 7x - 5$

39) $x^2 - 24x + 144$

40) $3x^2 - 18x - 216$

41) $27x^2 + 9x - 6$

42) $16x^2 - 25$

43) $24x^2 + 62x + 5$

44) $x^2 - 17x + 30$

45) $144x^2 - 36$

46) $5x^9 - 320x^7$

47) $4x^2 - 9$

48) $x^2 - 15x - 54$

49) $35x^2 - 50x + 15$

50) $x^2 + 45x + 434$

51) $x^2 + 7x - 588$

52) $8x^3 + 24x^2 + 16x$

53) $49x^2 - 196$

54) $x^2 - 3x - 1,638$

55) $x^2 - 30x + 104$

56) $x^2 + 5x - 1,254$

57) $x^2 + x - 2,070$

58) $15x^2 - 105x + 180$

59) $20x^2 + 36x + 16$

Linear Equations:

60) $\frac{1}{2}x + 39 = 31$

61) $42 - \frac{3}{4}x = 21$

62) $8x - 5 = 3x + 50$

63) $(5x - 2) + (7x + 5) = -81$

64) $(9x - 4) - (6x + 5) = 27$

65) $(15x + 11) - (24 - 5x) = -18$

66) $6(2x + 5) + 5(3x - 7) = 4$

67) $7(6x - 1) - 6(8x + 3) = 5$

68) $12(9 - 4x) - 5(3x + 21) = 129$

Solve by Factoring:

69) $x^2 = 22x - 96$

70) $5x^2 - 3x - 15 = 6x^2 + 10x + 15$

71) $8x^2 - 6x + 72 = 9x^2 - 6x - 72$

72) $10x^2 = 2x^3 - 168x$

73) $6x^2 = 30x + 396$

74) $x^3 + 39x = 16x^2$

75) $20x^2 - 45 = 0$

76) $3x^2 = -3x + 216$

77) $5x^3 - 220x = 5x^2$

Solve with Quadratic Formula:

78) $x^2 - 5x - 25 = 0$

79) $17x^2 = 14x - 1$

80) $11x^2 + 6x = 1$

Completing the Square:

81) $x^2 + 6x - 39 = 0$

82) $x^2 - 20x + 16 = 0$

83) $x^2 - 12x + 35 = 0$

84) $x^2 + 8x - 176 = 0$

85) $x^2 - 18x + 32 = 0$

86) $x^2 + 16x - 8 = 0$

Day 3:

Multiplying/Dividing Monomials and Polynomials:

87) $(4x^4y^{-3}z^6)^3$

88) $(2x^8y^{10}z^{-5})(5x^{-5}y^3z^2)^3$

89) $\frac{48x^7y^6z^8}{32x^5y^{-6}z^8}$

90) $\frac{(4x^{10}y^8z^5)^2}{(2x^4y^{-4}z^{-2})^5}$

91) $(7x^7y^4z^3)^2(4x^{-5}y^3z)^3$

92) $\frac{(8x^2y^5z^3)^2}{(4x^{-3}y^2z^2)^3}$

93) $(6x - 7)^2$

94) $(9x + 2)^2$

95) $(5x - 8)^3$

96) $(10x + 4)^3$

Imaginary numbers:

97) $i^{122} =$

98) $i^{132} =$

99) $i^{109} =$

100) $i^{123} =$

101) $i^{200} =$

102) $i^{151} =$

103) $(13 - 6i)(7 + 8i)$

104) $(13 - 2i)(13 + 2i)$

105) $(10 - 7i)(5 - 3i)$

106) $8i^2(4 - i) - 6i(11 - 8i)$

107) $(7 - 6i)(9 + 8i)$

108) $4i^2(7 + 6i) - 7i^2(4 + 3i)$

Absolute Value Equations:

109) $5|6x - 12| - 7 = 203$

110) $\frac{2}{3}|8x - 1| + 23 = 33$

111) $\frac{2}{3}|15x + 20| - 72 = -12$

112) $\frac{3|4x + 20|}{-8} - 7 = -1$

$$113) \frac{4|3x + 27| + 2}{7} = 14$$

$$114) \frac{7|5x - 10| - 8}{-4} = 72$$

$$115) \frac{2|5x + 15|}{7} - 5 = 15$$

$$116) \frac{6|4x - 6| - 3}{9} - 24 = -15$$

Part II Answer Key

109) $x = \{-5, 1\}$

110) $x = \{-1.75, 2\}$

111) $x = \{-8, 5.33\}$

112) No Solution

113) $x = \{-17, 11\}$

114) No Solution

115) $x = \{-17, 11\}$

116) $x = \{-2, 5\}$

Radical Equations:

117) $5\sqrt{11 - 10x} - 13 = 32$

118) $\sqrt{2x + 38} - x = -5$

$$119) \sqrt{12x - 20} = x$$

$$120) \sqrt{11x + 9} + 3 = x$$

121) $\frac{1}{3}\sqrt{12x + 36} - 14 = -10$

122) $\sqrt{7x - 5} + 7 = x$

Rational Expressions:

$$123) \frac{5x^2 - 11x - 12}{x^2 - 3x - 28} - \frac{4x^2 - 11x + 37}{x^2 - 3x - 28}$$

$$124) \frac{x + 6}{x^2 - 2x - 63} + \frac{5}{7x^2 - 63x}$$

$$125) \frac{x-2}{x^2-14x+45} - \frac{x-5}{x^2-81}$$

$$126) \frac{x^2-5x-66}{x^2-2x-48} \bullet \frac{x^2+22x+121}{x^2-121}$$

$$127) \frac{2x^4 - 4x^3 - 30x^2}{6x^2 + 72x + 162} \div \frac{x^6 - 25x^4}{3x^2 + 12x - 135}$$

Rational equations:

$$128) \quad \frac{7}{6x} - \frac{5}{4x} = \frac{-1}{48}$$

$$129) \quad \frac{1}{2x} - \frac{2}{5x} = \frac{1}{60}$$

$$130) \frac{x}{x+6} + \frac{9}{x-6} = \frac{52}{x^2-36}$$

$$131) \frac{x+1}{x-7} + \frac{2}{x-4} = \frac{4x-4}{x^2-11x+28}$$

$$132) \quad \frac{x+1}{x+3} + \frac{x-5}{x-6} = \frac{x^2-8x+21}{x^2-3x-18}$$