Pre-Calculus Summer Prep Packet

Welcome to Pre-Calculus! This packet is for all students entering Pre-Calculus (standard level for grades 9 – 11 and honors for grade 12).

Attached, you will find the basic learning targets from Algebra and Geometry that you are expected to remember **BEFORE** you come to class in the fall. For each topic addressed, this packet contains review examples, properties, definitions, and online video tutorial links followed by practice problems. This material must be mastered in order for you to be successful in Pre-Calculus. You will be assessed at the beginning of the school year. Since this material is designed as a review, you are responsible for completing this packet on your own. The packet will be graded to assess the student's EFFORTS to recall this information. Be sure to **show your work!**

Name: _____

Pre Calculus
Standard Level (grades 9 - 11)
Honors Level (Grade 12)
Summer Math Program

Learning Targets:

Order of Operations with Integers
Adding and Subtracting Rational Numbers
Multiplying Rational Numbers
Dividing Fractions
Using The Distributive Property
Solving Multi-Step Equations
Solving Proportions
Evaluating Functions
Graphing Functions
Graphing Lines
Writing Slope-Intercept Form Given a Graph
Solving Systems of Equations With Graphing
Solving Systems of Equations With The Substitution Method
Solving Systems of Equations With The Elimination Method
Applying Properties of Exponents
Adding and Subtracting Polynomials
Multiplying Polynomials
Special Products of Polynomials
GCF Factoring
Factoring Quadratics
Factoring Special Case Quadratics
Simplifying Radicals
Using Trigonometry To Find a Missing Side of a Right Triangle
Solving Quadratic Equations by Factoring
Solving Quadratic Equations using the Quadratic Formula

Name_____

Summer Program

Date_____ Period____

Evaluate each expression.

1) $6 \div (4 - 1)$

2) $4 - 3 + 5$

3) $1 + 1 - 6 \div (3 + 3)$

4) $4 + (5 + 3)(6 - 3)$

5) $6 \div (5 - (6 - 5) - 2)$

6) $(9 \times 2) \div (5 - 4 + 5)$

NO CALCULATORS. Evaluate each expression. Put all answers in fraction form

7) $\frac{3}{4} - 1\frac{2}{3}$

8) $\left(-\frac{5}{4}\right) - 2\frac{1}{2}$

9) $\left(-1\frac{3}{4}\right) - 4\frac{6}{7}$

10) $\left(-\frac{1}{3}\right) - \frac{13}{8}$

NO CALCULATORS. Find each product. Show answers in fraction form.

11) $\left(-\frac{3}{2}\right)\left(\frac{1}{6}\right)$

12) $(2)\left(-\frac{11}{6}\right)$

13) $\left(5\frac{7}{8}\right)\left(-\frac{1}{2}\right)$

14) $\left(-2\frac{5}{7}\right)\left(\frac{1}{2}\right)$

Find each quotient.

15) $\dfrac{\frac{5}{7}}{2}$

16) $\dfrac{\frac{7}{4}}{\frac{2}{7}}$

17) $\dfrac{\frac{7}{4}}{-\frac{1}{3}}$

18) $\dfrac{-2\frac{2}{3}}{-\frac{1}{7}}$

Simplify each expression.

19) $-9(7x + 5) + 10x$

20) $6(7v + 10) - 9$

21) $-6(5x + 2) - 1$

22) $-9 - 9(8a + 5)$

Solve each equation.

23) $-12 = -6(n - 9)$

24) $10 - 8n = -30$

25) $7 = \dfrac{x}{2} + 9$

26) $-8v + 3(7v - 6) = -122$

27) $6 + 7(1 - 7n) = -85$

28) $-140 = 2(8v - 6)$

29) $-5(1 + 2b) = -85$

30) $2(5 - 2x) = 16 - 3x$

31) $5 - 7x = 6(6x + 8)$

32) $6(8a - 7) = 38 + 8a$

33) $26 - 4p = -4(p - 6)$

34) $6x - 4(6 - 6x) = -3x - 24$

Solve each proportion.

35) $\frac{6}{n} = \frac{2}{5}$

36) $\frac{2}{r} = \frac{4}{5}$

37) $\frac{7}{3} = \frac{p}{7}$

38) $\frac{5}{3} = \frac{8}{k - 4}$

39) $\frac{p - 1}{10} = \frac{8}{5}$

40) $\frac{n - 4}{6} = \frac{2}{10}$

Evaluate each function for the given value.

41) $f(x) = -3|x - 2|$; Find $f(-1)$

42) $f(x) = 3x - 1$; Find $f(3)$

43) $f(x) = 2|x - 2| - 3$; Find $f(0)$

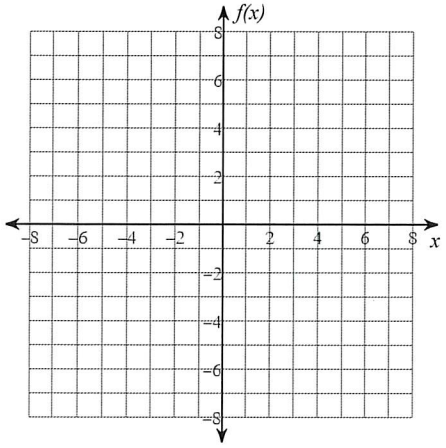
44) $f(x) = |x - 4| - 2$; Find $f(10)$

45) $f(x) = -x^2$; Find $f(2)$

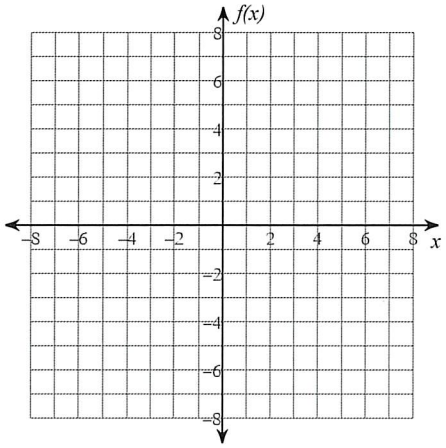
46) $f(x) = x^2 - 2x - 3$; Find $f(-1)$

Graph each function.

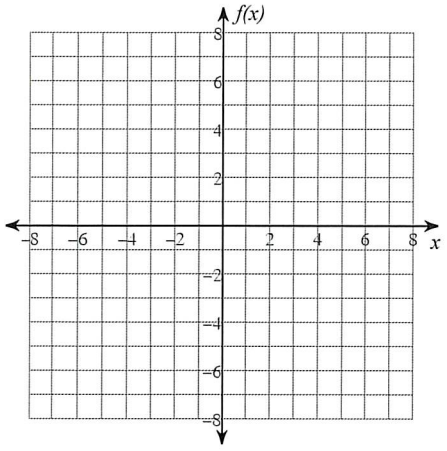
47) $f(x) = x + 1$



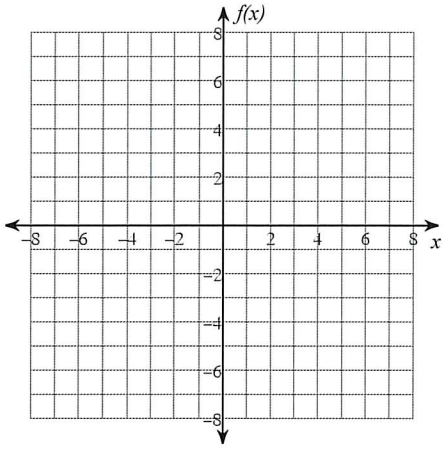
48) $f(x) = -x + 1$



49) $f(x) = x + 4$

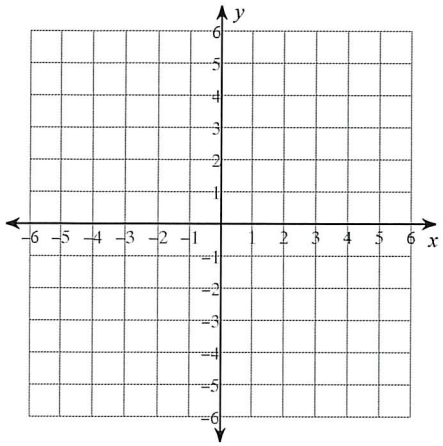


50) $f(x) = -3x - 6$

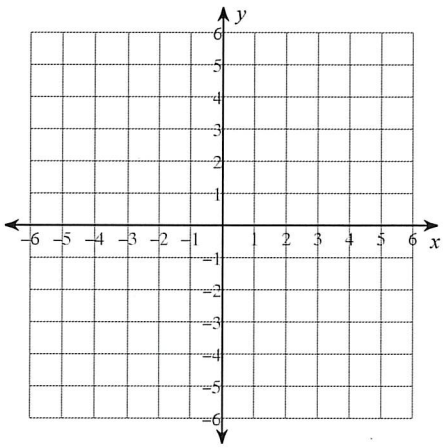


Sketch the graph of each line.

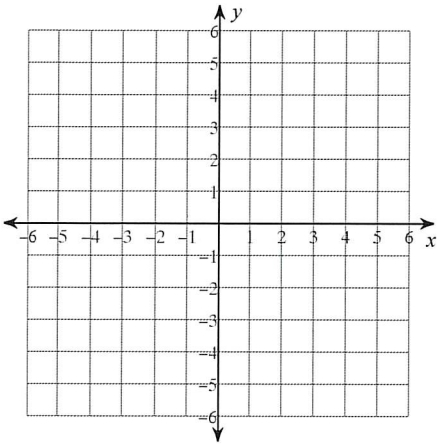
51) $2x - 3y = 0$



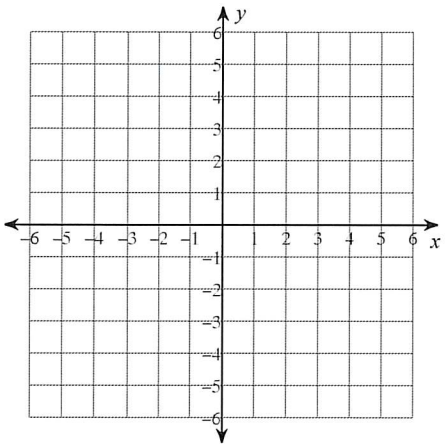
52) $x - 2y = -4$



53) $3x + 2y = -4$

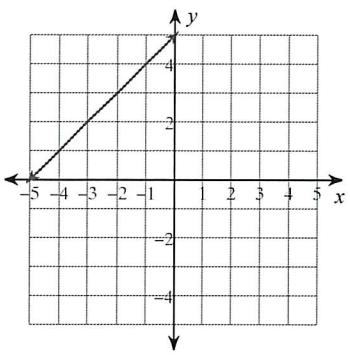


54) $x + 3y = 6$



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

55)



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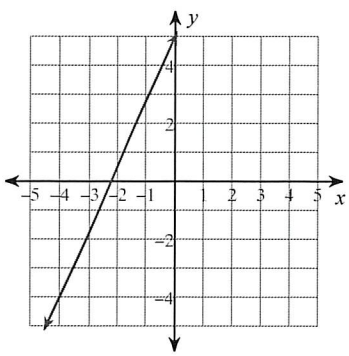

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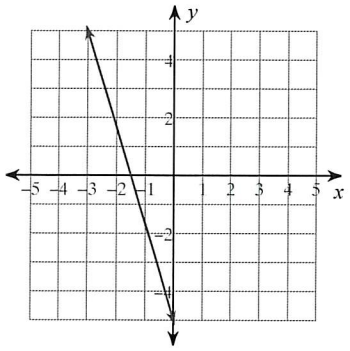

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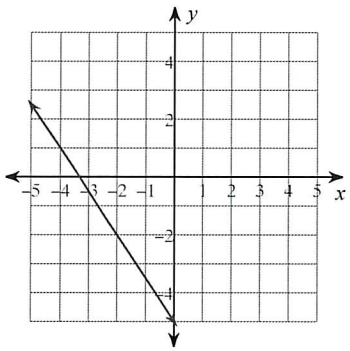
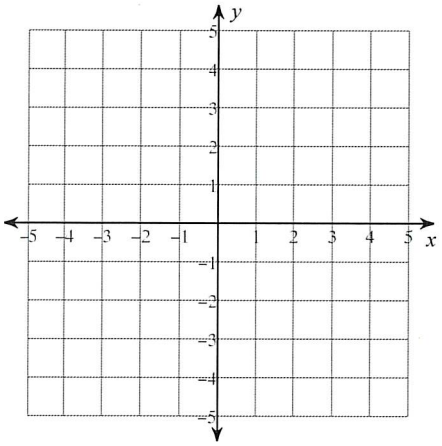


Solve each system by graphing.

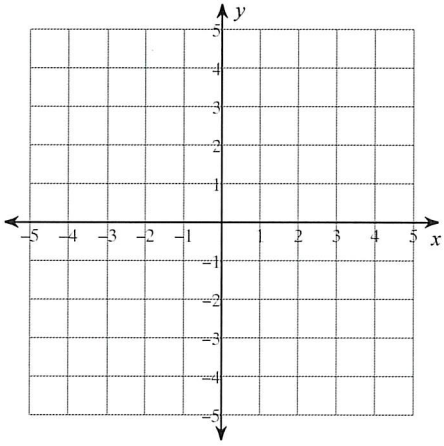
59) $y = -\frac{1}{2}x - 3$

$y = 2x + 2$



60) $y = x - 3$

$y = -x + 1$



Solve each system.

61) $2x + 6y = -20$

$x - 4y = 18$

62) $-3x + 6y = 6$

$x + 3y = -17$

63) $-3x + y = -19$

$-4x + 2y = -24$

64) $2x + 2y = -10$

$4x + 6y = -20$

65) $4x - 10y = 18$
$8x + 6y = 10$

66) $7x - 10y = 6$
$10x - 20y = -20$

Simplify. Your answer should contain only positive exponents.

67) $4x^3 \cdot 3x^4 \cdot -x^3$

68) $-4x^4 \cdot -2x^3$

69) $(p^3)^3$

70) $\frac{2x^3}{4x}$

71) $\frac{2x^3}{-3x}$

72) $4x^{-3}$

73) $-x^3 \cdot 3x^3 \cdot -3x^2$

74) $4x^2 \cdot 2x^{-4}y^4$

75) $(m^2n^3)^2$

76) $\frac{4m^{-1}n^3}{2nm^2}$

Simplify each expression.

77) $(7n^3 + 2n^4 + 4n) - (2n^3 + 2n - 6n^4)$

78) $(8 + 4m^2 - 3m) - (2 - 5m^3 - 3m^2)$

79) $(6n^2 + 4n^4 - 4n) + (2n + 2n^4 - 4n^2)$

80) $(8n - n^4 + 7) + (4 + 3n + 4n^4)$

Find each product.

81) $(6x + 1)(6x + 8)$

82) $(7b + 5)(4b - 2)$

83) $(6x - 7)(2x - 1)$

84) $(7n - 1)(4n + 5)$

85) $(-8n - 2)(2n^2 - 6n + 8)$

86) $(6n + 1)(-5n^2 + 2n - 7)$

87) $(b - 7)(b + 7)$

88) $(8x - 7)(8x + 7)$

89) $(2v - 6)^2$

90) $(4r + 2)^2$

Factor the common factor out of each expression.

91) $56m^5 + 24m^3n + 72m$

92) $50n^3 - 20n^5 - 50n^3m^3$

93) $48u^2v^3 - 24u^2 + 16u$

94) $-20u^2v^2 + 20u^3v^3 + 10u^3v^4$

Factor each completely.

95) $a^2 - 8a + 12$

96) $n^2 - 2n - 15$

97) $p^2 - 8p - 9$

98) $v^2 + 13v + 42$

99) $x^2 - 11x + 30$

100) $x^2 + 11x + 28$

101) $p^2 - 1$

102) $p^2 - 6p + 9$

103) $2n^2 - 13n + 21$

104) $3p^2 - 31p + 70$

Simplify.

105) $\sqrt{112}$

106) $\sqrt{392}$

107) $\sqrt{125}$

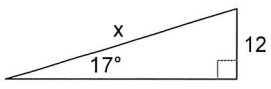
108) $\sqrt{20}$

109) $\sqrt{80}$

110) $\sqrt{100}$

Find the missing side. Round to the nearest tenth.

111)



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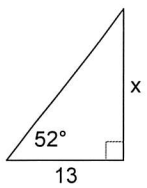

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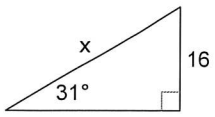

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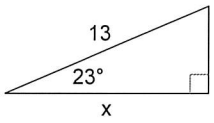

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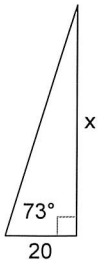

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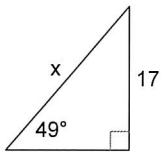

Solve each equation by factoring.

117) $a^2 - 6a + 8 = 0$

118) $x^2 - 13x + 42 = 0$

119) $a^2 - 3a - 18 = 0$

120) $a^2 + a - 2 = 0$

121) $(m + 3)^2 = 0$

122) $(a + 2)(a - 6) = 0$

123) $2v^2 - 26v + 80 = 0$

124) $2k^2 + 8k - 10 = 0$

Solve each equation with the quadratic formula.

125) $4x^2 - 4x - 16 = 0$

126) $11x^2 - 4x - 14 = 0$