Name:_____ Due Monday Sept. 9, 2019

Honors PreCalculus Summer Review Packet

TO: All 2019-2020 Honors PreCalculus Students

FROM: Honors PreCalculus Teachers

To help ensure your success in Honors PreCalculus next year, you must complete this summer review packet. The packet covers topics from Algebra, Geometry, & Algebra 2.

THIS PACKET IS TO BE COMPLETED IN THE FOLLOWING MANNER:

- Work must be clearly labeled and in consecutive order on **separate paper.**

- Each problem, with work, counts toward the total grade.

- Each problem must have WORK! **NO WORK = NO CREDIT**

- **THE PACKET WITH WORK IS DUE ON THE FIRST FULL DAY OF SCHOOL.**

   All answers must be recorded on the answer sheet provided!

The Packet has been divided into the following sections:

Linear Equations	Quadratics	Rational Expressions
Solving Linear Equations	Domain & Range	Right Triangle Trigonometry
Linear Systems	Operations with Exponents	Trigonometric Functions
Functions	Graphing Equations	Synthetic and Long Division
Log Equations		

There are free apps for a graphing calculators!! Search: Wabbitemu, Desmos or graphing calculator. Each section has a link to a review video on Khanacademy to help refresh your memory.

"On my honor, I have neither given nor received any unauthorized aid on this assignment"

_____

Student Signature (Must be in Pen!)

Name: _____

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73. **See Graph**	74. **See Graph**
75. **See Graph**	76. **See Graph**
77. **See Graph**	78. **See Graph**
79. **See Graph**	80.
81.	82.
83.	84.
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Honors PreCalculus Summer Review Packet

This packet is a review of information you learned in Algebra, Geometry, & ₁Algebra 2   You need to know this information to be successful in PreCalculus. Therefore, this packet is due on your **FIRST DAY IN PRECALCULUS**. It is to be completed <u>CORRECTLY</u>, <u>NEATLY,</u> and on <u>SEPARATE</u> sheets of paper.

Your PreCalculus teacher will collect your work on your **FIRST DAY IN PRECALCULUS**. Failure to turn in your completed work on your **FIRST DAY IN PRECALCULUS** may jeopardize your ability to remain in the course.

LINEAR EQUATIONS

Write the appropriate Linear Equation for each of the following.

> https://www.khanacademy.org/math/algebra/two-var-linear-equations#forms-of-two-var-linear-equations

1. The point-slope form given $(-3, 10)$ with $m = -4$.

2. The standard form given $(-2, 6)$ & $(5, 2)$.

3. The slope-intercept form given $(-1, -5)$ & $(6, 0)$.

4. The slope-intercept form given $(6, -5)$ & perpendicular to $-5x - 7y = -17$.

5. The standard form of the line parallel to the given line $y = 3x$.

SOLVING LINEAR EQUATIONS

Solve each Linear Equation for the stated variable.

> https://www.khanacademy.org/math/algebra/one-variable-linear-equations

6. Solve for x.
    $5x + 3(x - 2) = 4x + 1$

7. Solve for m.
    $g = 4cm - 3m$

8. Solve for x.
    $-(1 + 7x) - 6(-7 - x) = 36$

LINEAR SYSTEMS

Solve the following Linear Systems.

> https://www.khanacademy.org/math/algebra/systems-of-linear-equations

9. $3x + 4y = 12$
    $2x - 3y = -9$

10. $-x - 5y - 5z = 2$
    $4x - 5y + 4z = 19$
    $x + 5y - z = -20$

11. $y = \frac{2}{3}x + \frac{7}{3}$
    $6y - 4x = 14$

12. The school that Stephan goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 3 senior citizen tickets and 1 child ticket for a total of $38. The school took in $52 on the second day by selling 3 senior citizen tickets and 2 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

13. For what value of b would the following system of equations have an infinite number of solutions?
    $9x + 12y = 21$
    $6x + 8y = 7b$

QUADRATICS

Solve by completing the square.

14. $x^2 + 10x - 25 = 0$ 15. $x^2 + 15 = 8x$

Solve the equation using the quadratic formula.

16. $2x^2 - 14x + 40 = 3x^2 - 16x + 32$ 17. $x^2 - 4 = 3x$

Solve the equation by factoring.

18. $4x^2 - 1 = 0$ 19. $x^2 + 3x = 10$

20. $5x^2 - 32x - 21 = 0$ 21. $x^2 - 11x + 19 = -5$

22. $27x^2 + 18x = 0$ 23. $2x^2 + 20x + 12 = 5x - x^2$

Solve by using your Graphing Calculator. Round answers to the nearest thousandths (3 decimal places).

24. $x^2 - 8x = -18$ 25. $13x^2 + 24x - 1 = 14$

DOMAIN & RANGE

Determine the domain and range of the following relation or function.

26. $(1, 2), (-3, 8), (-9, 6), (\frac{1}{2}, 5)$ 27. $y + 9x = 15$

28. $y = x^4 + 3x^3 - x^2 - 5x$ 29. $y = \sqrt{x+1} - 3$

30. $y = 6 - |x|$ 31. $y + 3x^2 = x - 2$

32.
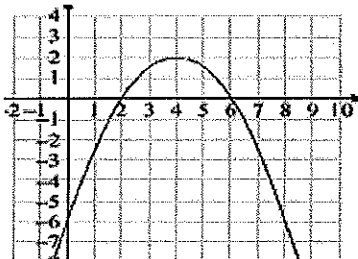
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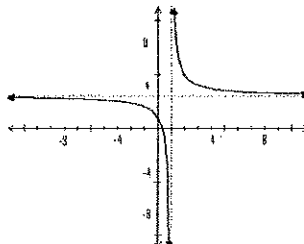
OPERATIONS WITH EXPONENTS

Simplify the following expressions; assume no variable is equal to zero.

34. $(2x^4)^{-3}$ 35. $\left(\frac{3}{x^{-3}}\right)^7$ 36. $\frac{5x^3y^9}{30x^4y^{-2}}$ 37. $\frac{xy^9}{2y^2} \cdot \frac{-7y}{21x^{-5}}$ 38. $\left(x^{\frac{5}{3}}y\right)(x^{-4}y)^{\frac{1}{2}}$

RATIONAL EXPRESSIONS

Factor and/or Reduce the following Rational Expressions.

39. $\dfrac{x^2+x-6}{x^2-4}$

40. $\dfrac{x^2+x-12}{5x-15}$

Complete each rational operation.

41. $\dfrac{3}{x+5} - \dfrac{x}{5}$

42. $\left(\dfrac{3x^2+7x-6}{9x^2-4}\right) \cdot \left(\dfrac{15x^2+4x-4}{9-x^2}\right)$
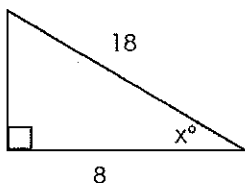
43. $\dfrac{\frac{x^2-1}{5x}}{\frac{x+1}{5x^2+10}}$

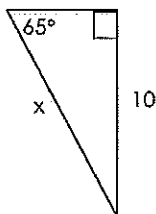**44.** For which nonnegative value of x is the expression $\dfrac{5+x}{25-x^2}$ undefined?

RIGHT TRIANGLE TRIGONOMETRY

Using right triangle trigonometry, determine the measure of the missing side or angle. Round answers to the nearest thousandths (3 decimal places).

45.

46.

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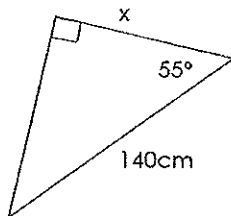
48. Find to the nearest degree, the measure of the smaller acute angle of a right triangle whose sides are 7, 24, and 25.

49. A man standing 24 feet from a flagpole observes the angle of elevation of its top to be 38°. Find the height of the flagpole to the nearest tenth.

TRIGONOMETRIC FUNCTIONS

Without any aids, fill in the Unit Circle.

50.
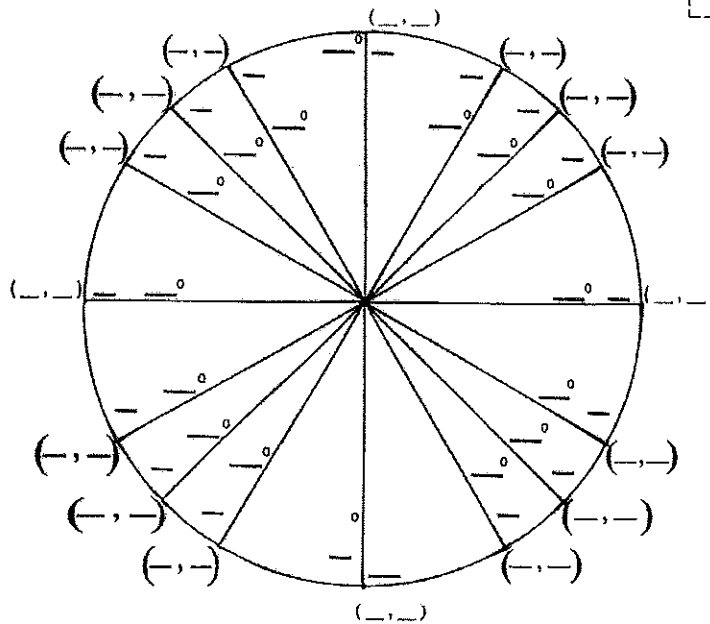
Without a calculator, determine the exact value of each expression.

51. $\sin\frac{\pi}{2}$

52. $\sin\frac{3\pi}{4}$

53. $\cos 180°$

54. $\cos\frac{7\pi}{6}$

55. $\cos 60°$

56. $\tan\frac{7\pi}{4}$

57. $\tan\frac{2\pi}{3}$

58. $\tan\frac{\pi}{2}$

FUNCTIONS

For 59 – 67: Let $f(x) = 2x-1$, $g(x) = 3x$, and $h(x) = x^2 + 1$. Compute the following:

59. $f(g(-3))$

60. $f(h(7))$

61. $(g \circ h)(24)$

62. $f(g(h(2)))$

63. $h(g(f(5)))$

64. $g(f(h(-6)))$

65. $f(x + 1)$

66. $g(3a)$

67. $h(x - 2)$

For 68 – 72, find the inverse of each function:

68. $h(x) = \sqrt[3]{x}$

69. $g(x) = \frac{1}{x} - 2$

70. $h(x) = 2x^3 + 3$

71. $g(x) = -4x + 1$

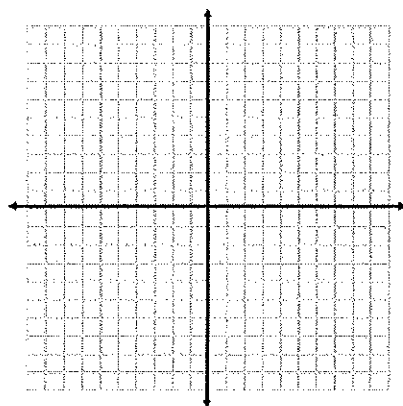**72.** $g(x) = \frac{7x+18}{2}$

GRAPHING EQUATIONS

Graph the following equations and state what the parent function is.
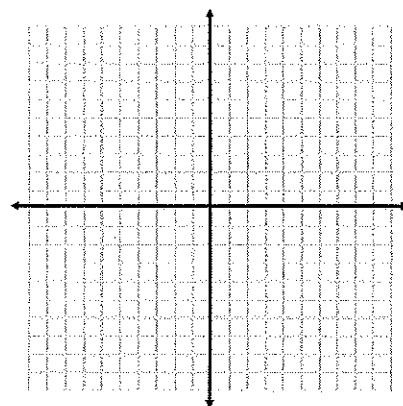
73. $y = -2x + 3$
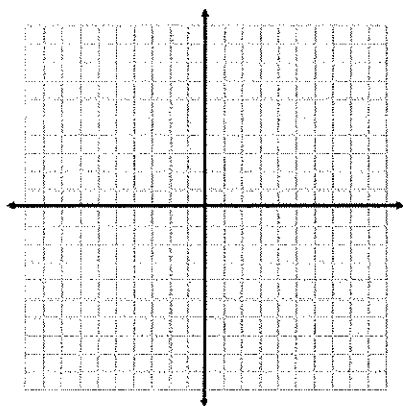
Parent Function:_____
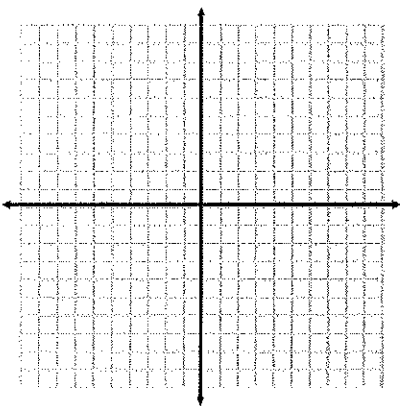
74. $y = \sqrt[3]{x} + 1$

Parent Function:_____
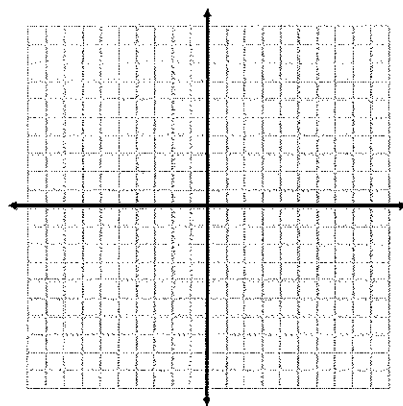
75. $y = |4x - 1| + 2$

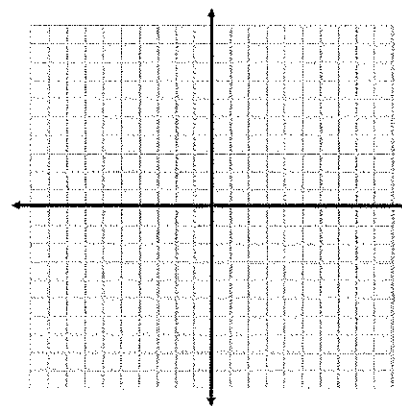Parent Function:_____

76. $y = 2x^3 + 4$

Parent Function:_____

78. $y = 3x^2 + 5x + 1$

Parent Function:_____

79. $(x + 3)^2 + (y - 1)^2 = 4$

Parent Function:_____

LONG DIVISION & SYNTHETIC DIVISION

For each of the following, divide using long division or synthetic division.

80. $(m^2 - 7m - 11) \div (m - 8)$

81. $(50k^3 + 10k^2 - 35k - 7) \div (5k - 4)$

USING LOGS

Solve each of the following equations:

82. $3^{2x-2} = 9$

83. $4^{-2x} = 4^{-x}$

84. $625^{3x} = 125^{x+1}$

85. $16^{2x} = 64$