King School
Honors PreCalculus AB Summer Assignment

Name: _____ Date: _____

Directions: Answer each of the following questions to the best of your ability. Make sure to show work to support each answer and circle your final answer for each question. Work neatly and try to show all of your work on the packet itself. You will be quizzed on this material during the first or second week of school so please take your time. You may use the Internet to look up a topic, but you cannot use the Internet to get the answer to a specific question. Feel free to email Ms. O'Toole with questions if you have any! See everyone in September!

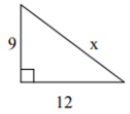
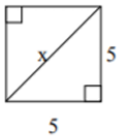
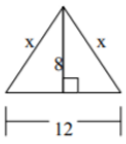
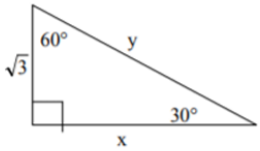
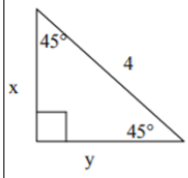
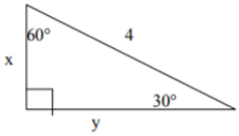
For #1-24, simplify each of the following expressions completely.

1. $\sqrt{(2x)^8}$	2. $\sqrt[3]{\frac{2x^3}{27}}$	3. $\frac{7-2i}{2+i}$
4. $\sqrt[3]{-64}$	5. $\sqrt[6]{64x^6}$	6. $(5+i)^2$

7. $(x^3 - 3x)(2x^2 + 3x + 5)$	8. $(\sqrt[5]{x^2})^5$	9. i^{93}
10. $(\sqrt{5} - \sqrt{6})(\sqrt{5} + \sqrt{2})$	11. $\sqrt[3]{\sqrt{x^3}}$	12. $3(2 - 8i) - 6(5 + 7i)$
13. $\frac{4}{\sqrt{3}}$	14. $\sqrt{50} - \sqrt{18} - \sqrt{-9}$	15. $(10 - 4i)^2$

16. $\frac{-3}{2-\sqrt{5}}$	17. $\sqrt{8x^3}+\sqrt{2x}$	18. $(6-4i)(6+4i)$
19. $(x-\frac{1}{4})(x+2)$	20. $\frac{\sqrt{24}}{4}-\frac{\sqrt{54}}{12}$	21. $\frac{1+6i}{5i}$
22. $\sqrt{\frac{18u^2}{b^3}}$	23. $8y-[2y^2-(3y-8)]$	24. $\sqrt[3]{\frac{15}{32}}$

For #25-30, solve for the variables in each diagram. Do NOT use a calculator for these problems.

25. 	26. 	27. 
28. 	29. 	30. 

31. Find the distance between P(-3, 10) and Q(1, 9). Find the coordinates of the midpoint of PQ.

32. Write the equation of the line in slope-intercept form that passes through the points (4, 3) and (7, -2).

33. Write the equation of the line in slope-intercept form that passes through the point (5, -3) and that is perpendicular to the line $\frac{2}{3}y - 4x = 1$.

34. Given the function $f(x) = x^2 - 3x + 6$, find each of the following:

a. f(-3)

b. f(a+2)

c. $f(2\sqrt{3})$

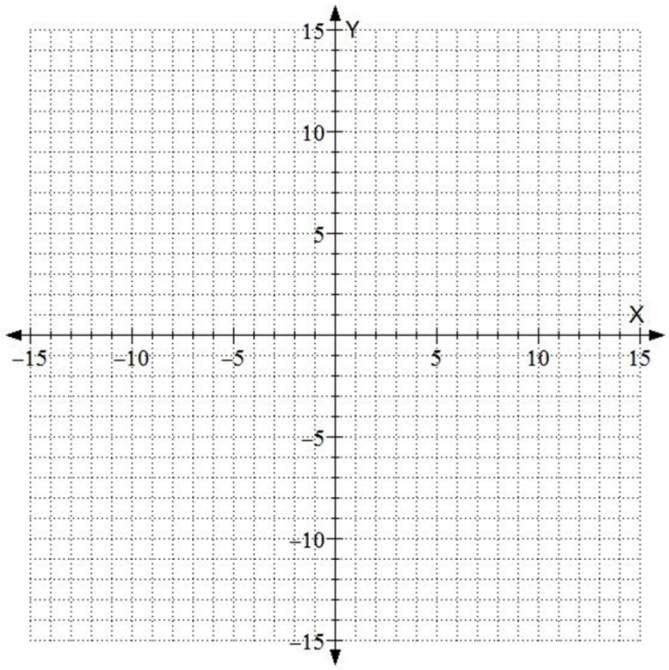
35. Given the equation $f(x) = (x + 2)^2 - 1$, find each of the following:
a. Vertex:

b. Axis of Symmetry:

c. x-intercept(s):

d. y-intercept:

e. Graph the function on the graph paper below.



For #36-53, solve each of the following equations.

36. $x^2 - 4x - 12 = 0$	37. $x^2 + 25 = 10x$	38. $x^2 - 14x + 40 = 0$
39. $x^2 - 9x + 14 = 0$	40. $5x^2 - 2x + 4 = 0$	41. $4x^3 - 4x^2 = 0$
42. $\frac{4}{(x-4)^2} = 1$	43. $\frac{14}{(z+4)^2} = 1$	44. $\frac{h}{3} + 5 = m$, solve for h

45. $\frac{(g+2)^2}{5} = n$, solve for g	46. $5^{log_5 4} = x$	47. $\sqrt{u-4} = w$, solve for u
48. $log_6 x - log_6(x+1) = 2$	49. $\|2x+3\| = 7$	50. $2(10^{\frac{-x}{3}}) = 20$
51. $3(5^{\frac{-x}{4}}) = 15$	52. $(x+2)^{\frac{3}{4}} = 27$	53. $log_2 x = 5$

For #54-56, solve for x by completing the square.

54. $x^2 + 6x = 7$

55. $2x^2 - 7x + 10 = 0$

56. $3x^2 - x - 8 = 0$

For #57-60, solve each inequality algebraically and graph the solution on a number line.

57. $-2|3x - 7| > -14$

58. $|5-6x|+10 \le 25$

59. $2x^2+17x+21 \le 0$

60. $-6(3x-4)+5(10-2x) > 7x-3(4x+19)$

61. $9x^2+12x+4 \ge 0$

For #62-65, simplify each expression fully.

62. $$\frac{y^3+2y^2+4y}{y^3+2y^2} \bullet \frac{y^2-4}{y^3-8}$$

63. $$\frac{5}{x^2+x-6} - \frac{2}{x-2} + \frac{4}{x^2-4}$$

64. $$\frac{\frac{a^2+b^2}{ab}+2}{\frac{a^2-b^2}{2ab}}$$

65. $$\frac{4x-6}{(x-1)^2} \div \frac{2x^2-3x}{x^2+2x-3}$$

For #66-67, solve each equation and check for extraneous solutions.

66. $\frac{2x}{x-1}+\frac{1}{x-3}=\frac{2}{x^2-4x+3}$

67. $\frac{x-3}{x}+\frac{3}{x+2}+\frac{6}{x^2+2x}=0$

68. $\sqrt{x^2-4x}=-4+x$

69. $\sqrt{x-15} = 3 - \sqrt{x}$

For #70-73, simplify each expression and write your answers with positive exponents only.

70. $\dfrac{x^{-2}}{\left(x^{5}y^{-4}\right)^{-2}}$

71. $\dfrac{2x^{2}y^{4} \cdot 4x^{2}y^{4} \cdot 3x}{3x^{-3}y^{2}}$

72. $(5^{1/3} \bullet x^{1/4})^{3}$

73. $\left(\sqrt[3]{x^{2}} \bullet \sqrt[6]{x^{4}}\right)^{-3}$

74. Find the measures of the angles of a triangle whose sides are lengths 28, 47, and 34. Draw a picture first and round your answers to the nearest hundredth.

75. Convert to radians: 340°

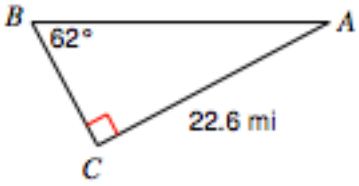
76. Convert to degrees: $\frac{-24\pi}{9}$

77.

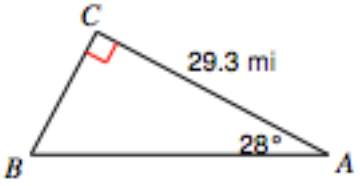
In $\triangle ABC$, $m\angle A = 32$, $a = 12$, and $b = 10$. Find the measures of the missing angles and side of $\triangle ABC$. Round each measure to the *nearest tenth*.

78. Solve each triangle (find all missing sides and angles). Round answers to the nearest hundredth.

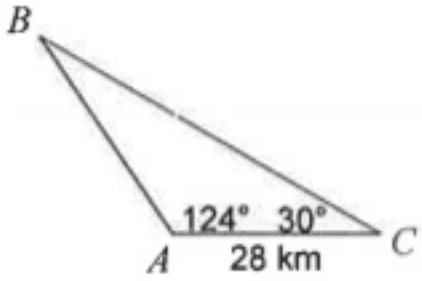
a.



b.

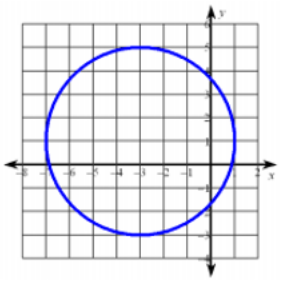


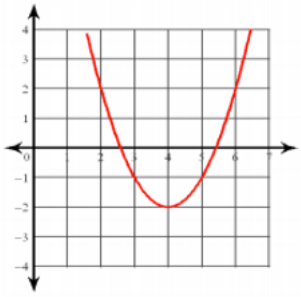
c.



79. Draw the angle -570° in standard position.

80. State the domain and range of each of the following relations.

a. 

b. 

c. $\{(-2,3),\ (-1,0),\ (-4,5),\ (1,5),\ (2,7)\}$

81. Solve each of the following systems of equations algebraically.

a. $\begin{cases} x+y+z=6 \\ x=2y \\ z=x+1 \end{cases}$

b. $\begin{cases} 4y=x^2+2 \\ x=y-1 \end{cases}$

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

$\sin\frac{\pi}{2}$ $\sin\frac{3\pi}{4}$ $\cos 180°$ $\tan\frac{2\pi}{3}$ $\tan\frac{7\pi}{4}$