KING SCHOOL

Summer Assignment

MAT 401: PreCalculus

King School
PreCalculus Summer Assignment

Name: _____ Date: _____

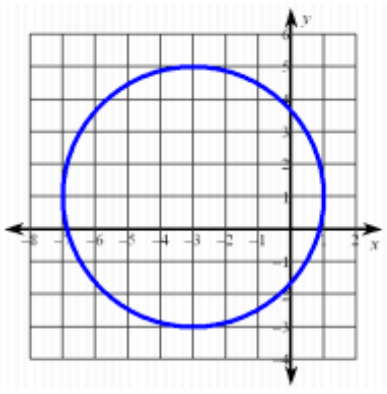
Directions: Answer each of the following questions to the best of your ability. Make sure to show work to support each answer and circle your final answer for each question. Work neatly and try to show all of your work on the packet itself.
You will be quizzed on this material during the first or second 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!

I. Find the equation of a line in slope-intercept form given the following information:

1. through $(5,-1)$ and $(0,4)$	2. slope of $^3/_2$ and passes through $(2,4)$
3. through $(-1,-1)$ and parallel to $y=-x-5$	4. through $(5,-3)$ and perpendicular to $y=\frac{5}{2}x$

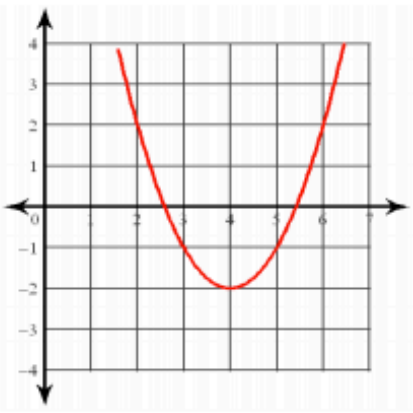
III. State the domain and range of the following relations:

1.



Domain: _____ Range: _____

2.



Domain: _____ Range: _____

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

D_x: _____ R_y: _____

4. $x=-2$

D_x: _____ R_y: _____

V. Evaluate each function.

1. If $f(a) = a^2 - 3a + 6$, find :

   a. f(-3) b. f(1/2) c. f(4b)

XII. Given the equation $(x) = (x + 2)^2 - 1$ *, find:*

1. Vertex: _____
2. Axis of Symmetry: _____
3. Direction: _____
4. Max or Min Value: _____
5. x intercept: _____
6. y- intercept: _____

For #3-5, solve for x by factoring.

3. $x^2 - x - 20 = 0$

4. $4x^2 - 8x + 3 = 0$

5. $x(3x - 7) = 6$

For #6 and 7, solve for x by taking square roots.

6. $4x^2 = 25$

7. $3(x+4)^2 = 8$

For #8-9, solve each absolute value equation.

8. $2|x-5|+10 = 80$

9. $3-4|7-2x| = 19$

For #10-14, simplify and write each answer in a + bi form.

10. $(1-i)(2+3i)$

11. $(1-2i)+(5i+6)-(7i-19)$

12. $\dfrac{4+i}{7i-1}$

13. $(3+4i)^2$

14. $\dfrac{5-i}{2i}$

For #15-20, simplify each radical expression.

15. $\sqrt{288}$

16. $\sqrt{2x^3y^4}$

17. $\sqrt[4]{16x^8y^6}$

18. $\sqrt[3]{96x^{10}y^{16}z^3}$

19. $\sqrt{\frac{x^5}{y^2}}$

20. $\frac{4}{\sqrt{10}}$

For #21-23, find the product of each.

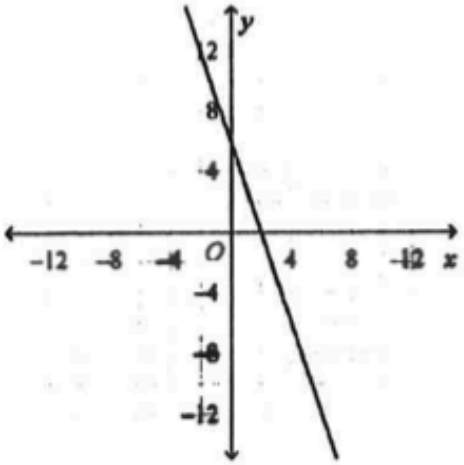
21. $(4x+1)(2x-5)$

22. $(3x-5)(4x^2-x+1)$

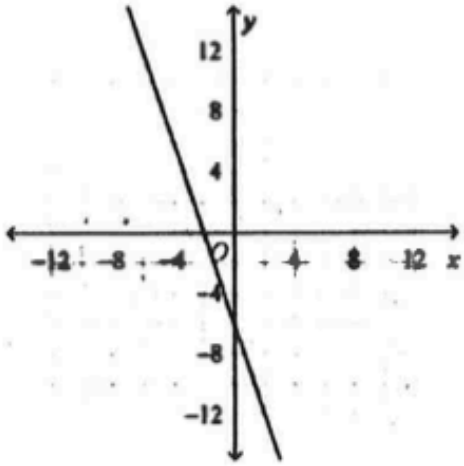
23. $(4x+y-10)(15-6x+7y)$

24. Pick the graph which represents the graph of the line -3x – y = 6.

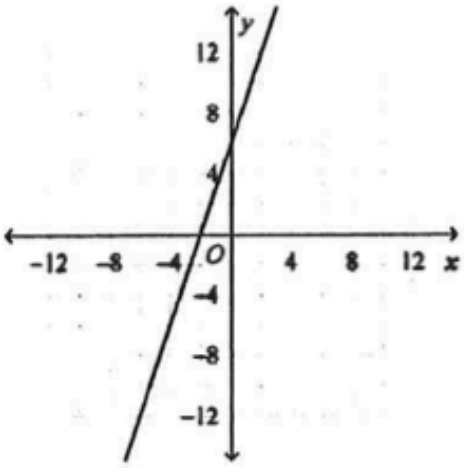
a.



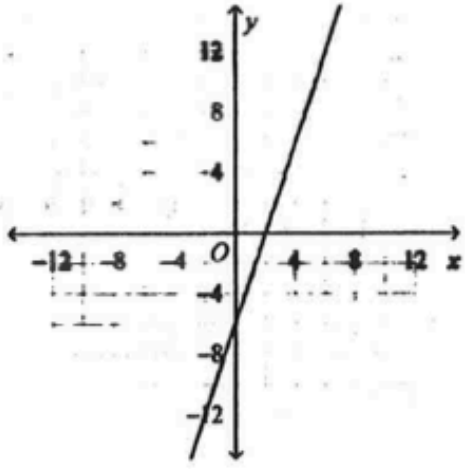
c.



b.



d.



25. Solve the following system of equation using substitution method.

$$\begin{cases} x-y=10 \\ -3x=5y-19 \end{cases}$$

26. Solve the equation $\sqrt{x+10}-7=-5$

27.

Multiply and simplify if possible.

$\sqrt{7x}\left(\sqrt{x}-7\sqrt{7}\right)$

a. $x\sqrt{7}-49\sqrt{x}$
b. $\sqrt{7x}-49x$
c. $x\sqrt{7}-x\sqrt{49}$
d. $-\sqrt{42x}$

28. Rationalize the expression $\dfrac{\sqrt{3}-\sqrt{6}}{\sqrt{3}+\sqrt{6}}$

a. $\dfrac{-1-2\sqrt{18}}{3}$
b. $\dfrac{-3-2\sqrt{18}}{9}$
c. $-3+2\sqrt{2}$
d. $9-2\sqrt{18}$

29. Simplify $-\sqrt{5}-3\sqrt{36}+6\sqrt{5}$
a. $5\sqrt{5}-18$
b. $5\sqrt{5}-3\sqrt{36}$
c. $-5\sqrt{5}-18$
d. None of these

30. Simplify $(-4+\sqrt{3})^2$

31. Draw a sketch of -150° in standard position.

32. In which quadrant does the terminal side of a 118° angle lie?
a. I b. II c. III d. IV e. Lies on an axis, not in a quadrant

33. Convert 320° to radian measure.

34. Convert $\frac{-3\pi}{5}$ to degree measure.

35. Write the equation of a quadratic function, in vertex form, that passes through the point (-2, 3) and has a vertex of (7, -4).

For #36-37, solve and graph your solution on a number line.

a. $3x^2 - 13x - 10 \geq 0$

b. $\frac{7x-2}{4x+3} < 9$

For #38-39, solve each equation for x. Check for any extraneous solutions.

38. $\frac{5}{x} - \frac{1}{3} = \frac{1}{x}$

39. $\frac{x}{x-1} - \frac{2}{x} = \frac{1}{x-1}$

For #40-43, simplify each expression completely.

40. $\dfrac{8z^3-1}{2z^2+5z-3}$

41. $\dfrac{y^3+2y^2+4y}{y^3+2y^2} \bullet \dfrac{y^2-4}{y^3-8}$

42. $\dfrac{7x-7y}{4y} \div \dfrac{14x-14y}{3y}$

43. $\dfrac{5}{x^2+x-6} - \dfrac{2}{x-2} + \dfrac{4}{x^2-4}$

For #44-53, factor each expression completely.

44. $x^3 + x$

45. $18y^3 + 48y^2 + 32y$

46. $16y - y^3$

47. $5y + 3y^2 - 2y^3$

48. $2(5x+1)^2 - 18$

49. $12x^2 + 22x - 20$

50. $2ac - 2bd + 4ad - bc$

51. $x^3 - 3x^2 - 4x + 12$

52. $4y^3 - 20y^2 + 25y$

53. $2x^3 - 16x^2 + 14x$