Name: _Key_

Algebra 2- Summer Assignment

Please show all work on a separate piece of paper to receive full credit. Read all directions before completing each section.

Order of Operations-
For problems 1-4, find the value for each of the given expressions.

1. $6 - 9 \div 3$

2. $(6 + 18) \cdot 2$

3. $(-1) - 8 - 3 \cdot (-10)$

4. $5 + 4^2 \div 2 - 3$

5. Evaluate $\dfrac{5a - b^2}{3c}$ if $a = 3$, $b = -1$, and $c = 4$.

1. 3

2. 48

3. 21

4. 10

5. $\dfrac{7}{6}$

Equations and Inequalities-
For problems 6-14, solve each equation or inequality for the given variable.

6. $x + 3 = 7$

7. $7x - 10 = 5x + 16$

8. $|x - 3| - 5 = -2$

9. $8 - 3(y - 4) = 5y + 2(y - 6)$

10. $\dfrac{m + 3}{8} = 2$

11. $v^2 - 100 = 0$

12. $10t - 24 < 6$

13. $12x - 6 \geq 7x + 19$

14. $-8 < 5x + 2 < 12$

6. $X = 4$

7. $X = 13$

8. $X = 0, 6$

9. $y = \dfrac{17}{5}$

10. $m = 13$

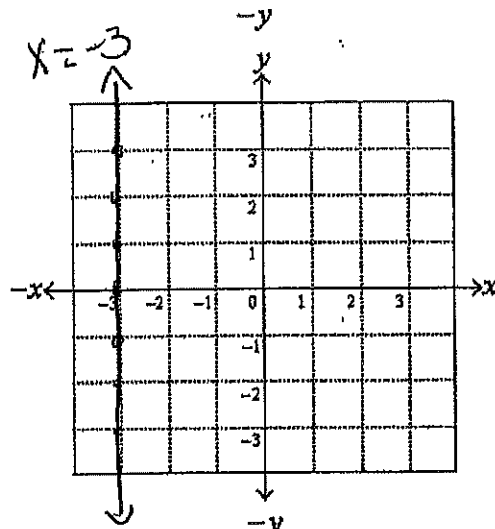11. $V = \pm 10$

12. $t < 3$

13. $X \geq 5$

14. $-2 < X < 2$

Graphing Linear Equations-
Graph the following linear equations in the given coordinate plane.

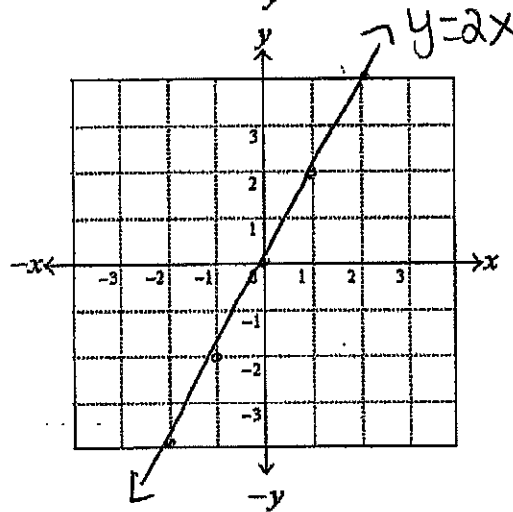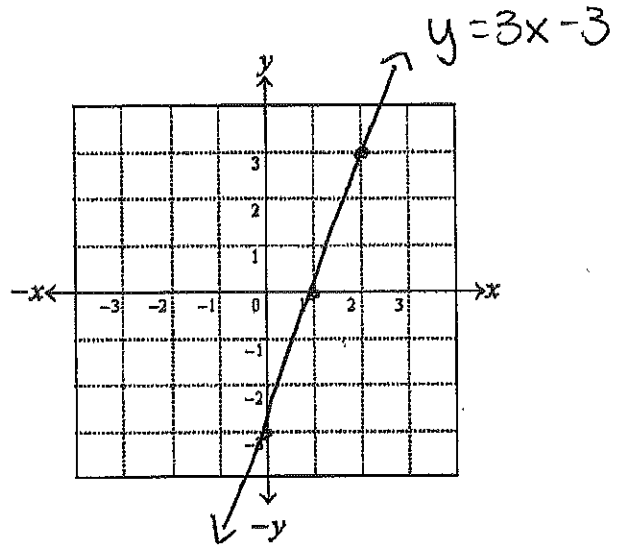15. $y = 1$

15.

$y = 1$

16. $x = -3$

16.

$x = -3$

17. $y = 2x$

17.

$y = 2x$
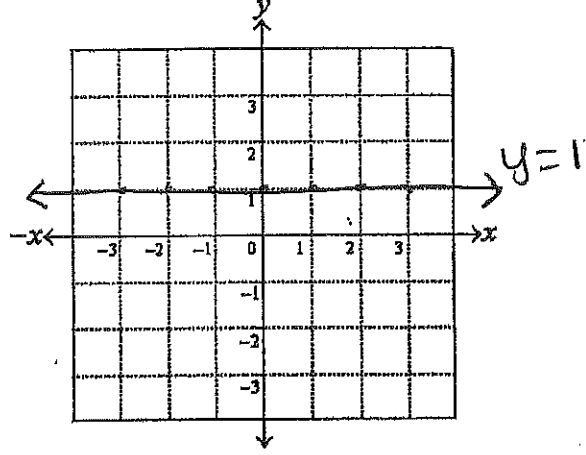
$$y = 3x - 3$$

18. $y = 3x - 3$ 18.

$$y = -\tfrac{1}{2}x + 3$$
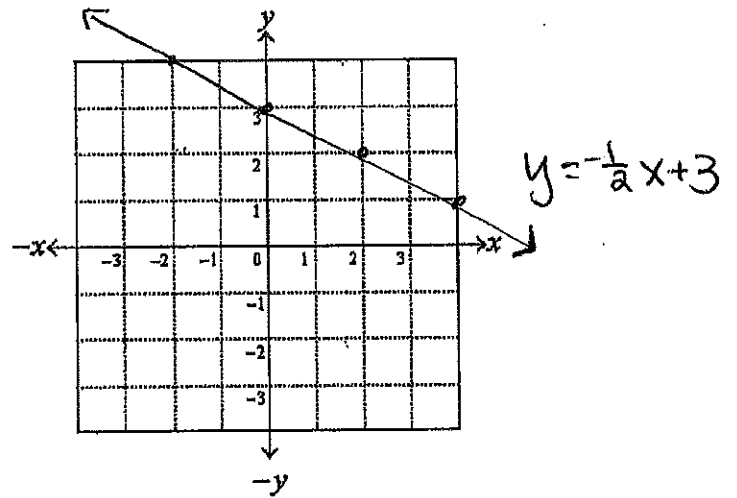
19. $y = -\dfrac{1}{2}x + 3$ 19.

Evaluating and Graphing Functions-
For problems 20-21, find the values of the function for the given x-values. (Fill in the table)

20. $f(x) = \dfrac{x+3}{2}$ 21. $g(x) = x^2 + 2x + 1$

x	$f(x)$
-1	1
0	$\tfrac{3}{2}$
1	2
3	3

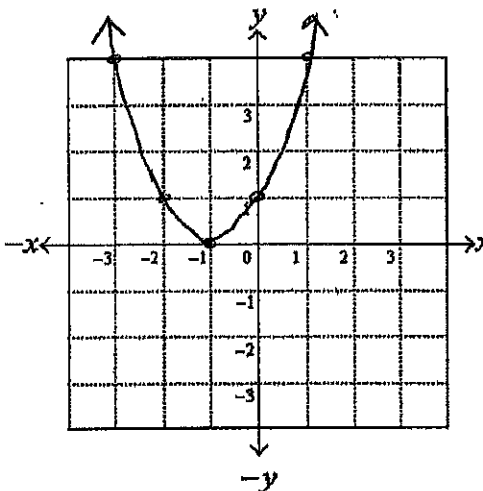| x	$g(x)$
-3	4
-2	1
-1	0
0	1
1	4

For problems 22-23, use the tables from problems 20-21 to graph the functions.
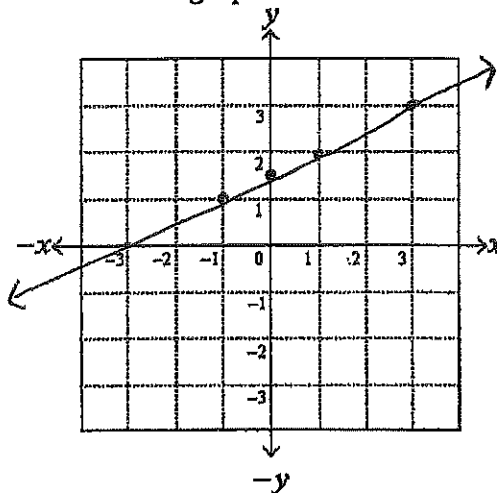
22. $f(x) = \dfrac{x+3}{2}$ 22.

23. $g(x) = x^2 + 3x - 2$ 23.

Factoring-
For problems 24-33, factor each polynomial completely. If you think it is not factorable, write "prime".

24. $7x^2 - 14x$ 24. $7x(x-2)$

25. $n^2 + 25$ 25. $prime$

26. $c^2 - 100$ 26. $(c+10)(c-10)$

27. $d^2 - 12d + 36$ 27. $(d-6)^2$

28. $y^2 + 18y + 81$ 28. $(y+9)^2$

29. $a^2 + 7a - 18$ 29. $(a+9)(a-2)$

30. $b^2 + 8b + 7$

31. $2x^2 - 3x - 5$

32. $4z^2 + 4z - 15$

33. $2ak + k - 6a - 3$

Simplifying Fractions and Rational Expressions-

34. $-\dfrac{9}{81}$

35. $\dfrac{48}{28}$

36. $\dfrac{20r^2}{16r}$

37. $-\dfrac{45p^6}{36p^3}$

38. $\dfrac{35k}{35k^2 - 50k}$

39. $\dfrac{m^2 - 2m - 48}{45m^2 - 5m^3} \cdot \dfrac{45m - 5m^2}{m + 7}$

40. $\dfrac{x + 7}{6x - 18} \cdot \dfrac{9x^2 - 81x}{9x^2 + 63x}$

30. $(b+1)(b+7)$

31. $(2x-5)(x+1)$

32. $(2z+5)(2z-3)$

33. $(k-3)(2a+1)$

34. $-\dfrac{1}{9}$

35. $\dfrac{12}{7}$

36. $\dfrac{5r}{4}$

37. $\dfrac{-5p^3}{4}$

38. $\dfrac{7}{7k-10}$

39. $\dfrac{(m-8)(m+6)}{m+7}$

40. $\dfrac{x-9}{6(x-3)}$