Name _____ Due Date 2nd Day of School

Show all work when necessary – no calculators allowed for this assignment (you may use them to check your answers)

For Questions 1-6, factor each of the following completely:

1. $15x^2 - 20x$	2. $x^2 - 13x - 30$
3. $6x^2 + 17x + 12$	4. $25x^2 - 49$
5. $x^3 - 8x^2 - 9x + 72$	6. $a^3b - ab^3$

For Questions 7-12, solve each equation – simplify your answers completely

7. $\frac{2}{3}x - \frac{5}{6} = \frac{7}{12}x + \frac{11}{24}$	8. $\frac{x}{9} = \frac{4}{x}$
9. $x^2 - 7x - 18 = 0$	10. $10x^2 - 6x - 3 = 0$

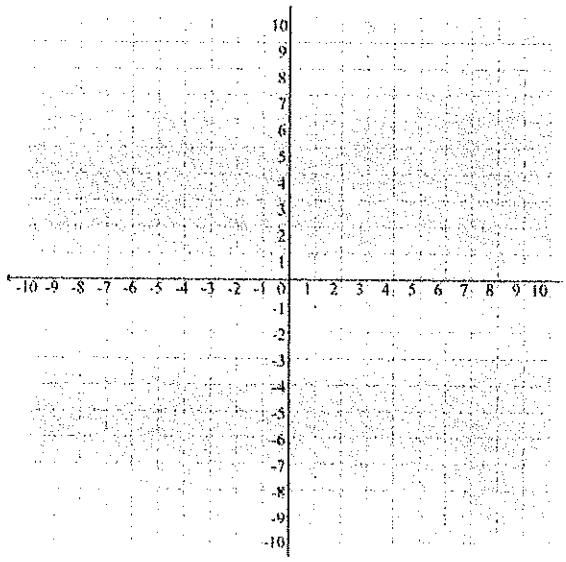
11. $x^2 - 18x - 9 = 0$	12. $2(x-8)^2 - 13 = 86$

For Questions 13-18, simplify each of the following expressions completely:

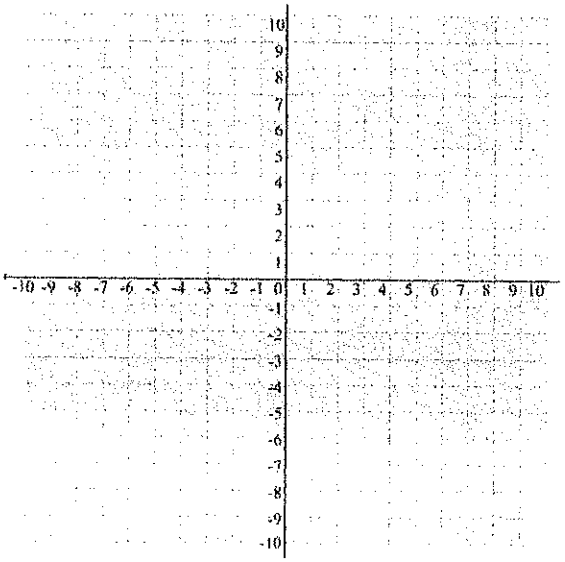
13. $x^6 * x^{10}$	14. $(3x^{-7}y^5)^4$
15. $\frac{24p^{24}}{8p^8}$	16. $9\sqrt{45} - 4\sqrt{80}$
17. $\left(3\sqrt{5} - 2\sqrt{10}\right)^2$	18. $\frac{3\sqrt{6}}{5\sqrt{3}+4\sqrt{2}}$

For Questions 19-24, graph each of the following as well as finding additional pieces of information

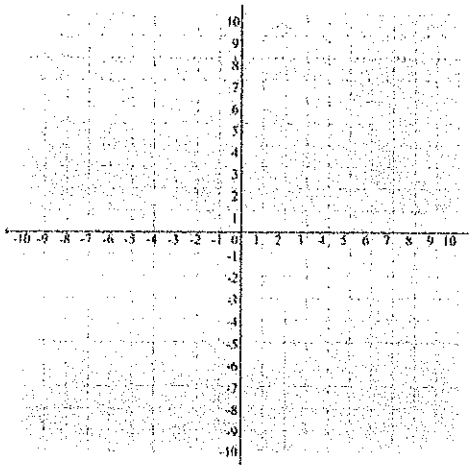
19. $y = \frac{3}{5}x - 4$; identify the slope, the y-intercept and the x-intercept



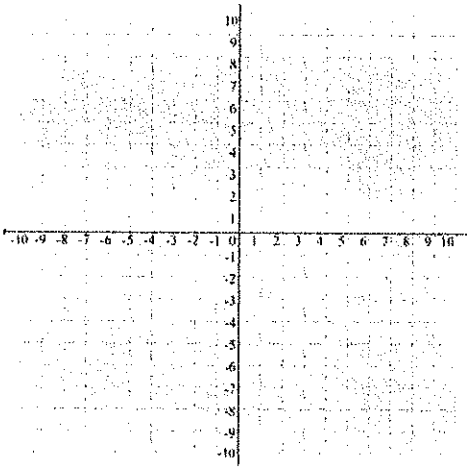
20. $2x - 8y > 16$; find an ordered pair that is a solution and an ordered pair that is not a solution



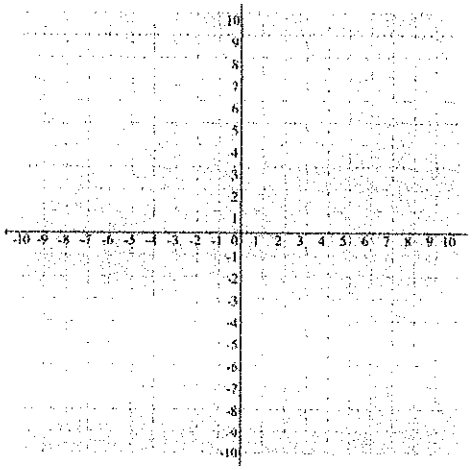
21. $y = 2x^2 - 4x - 6$; identify the vertex, all intercepts and the domain and range



22. $y = -\frac{1}{3}(x-3)^2 + 6$; identify the vertex, all intercepts and the domain and range



23. $y = 2(x-3)(x+1)$; identify the vertex, all intercepts and the domain and range



Solve each of the following systems of equations

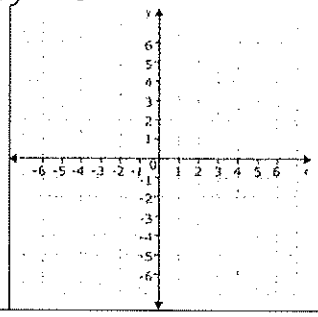
24. $5x - 3y = 18$
$2x + 7y = -1$

25. $6x - 10y = 14$
$-3x + 5y = 7$

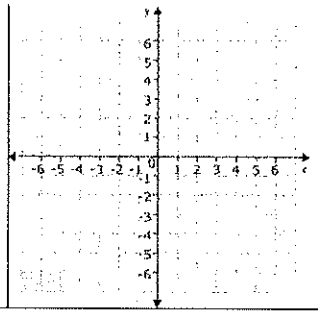
26. $9x + 12y = -18$
$-6x - 8y = 12$

For these final questions, please graph of the following equations

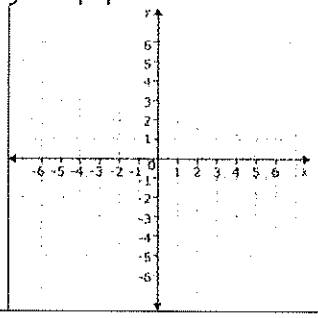
27. $y = 4$



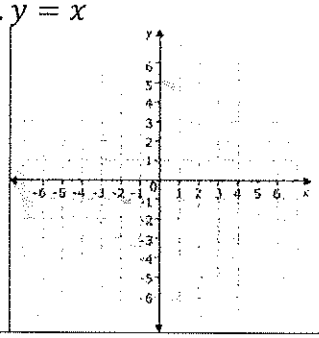
28. $x = -5$



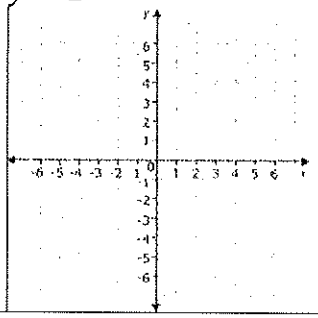
29. $y = |x|$



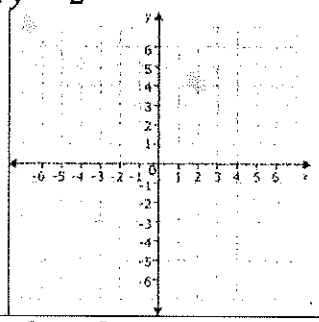
30. $y = x$



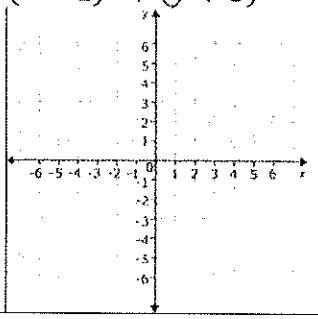
31. $y = 2^x$



32. $y = 2^{-x}$



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



34. $x^2 + y^2 + 4x - 6y + 4 = 0$