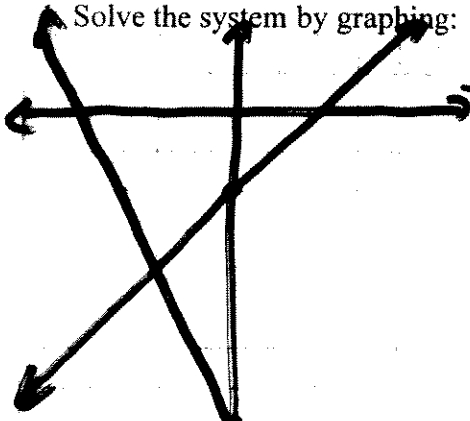
Name KEY Period

Algebra 1 Final Exam Review (Spring)

1. Solve the system by graphing: $x - y = 2$ $2x + y = -8$



$-x+y \quad -x+y$

$x-2=y$

$(-2,-4)$

$y = x - 2$

$y = -2x - 8$

2. Solve the linear system using any method.

$2x - 6y = 12$

$x + y = 8$

$(7.5, .5)$

$2x-6y=12$

$6x+6y=48$

$8x = 60$

$\frac{8}{8} \quad \frac{8}{8}$

$x = 7.5$

3. Solve the linear system using any method.

$5x + 3y = 6$

$4x + 3y = 10$

$(-4, 8\frac{2}{3})$

$5x+3y=6$

$-4x-3y=-10$

4. A total of \$20,000 is invested in two funds paying 6% and 8% annual interest. The combined annual interest is \$1260. How much of the \$20,000 is invested in each fund? $(17{,}000, 3{,}000)$

5. Find the solution of the system, if it exists.

$x + y = 12$

$x + y = 8$

No Solution

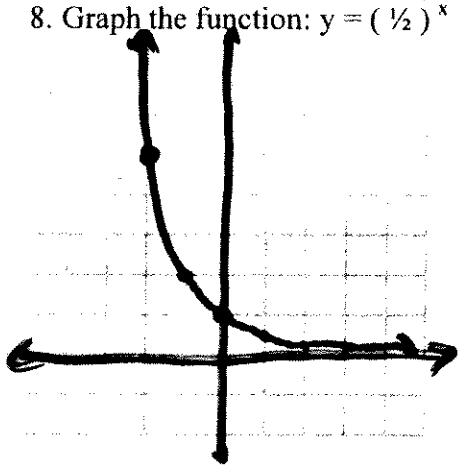
$x+y=20{,}000$

$.06x+.08y=1260$

6. Simplify $(3x)^2 (6y^2)^3$ $1944x^2y^6$

7. Rewrite the expression using positive exponents. $(-3)^0 (6x^{-2}z^{-4})^{-1}$ $\frac{x^2z^4}{6}$

8. Graph the function: $y = (\frac{1}{2})^x$



x	y
-2	4
-1	2
0	1
1	1/2
2	1/4

9. Simplify the expression $\frac{8x^2y^{-2}}{x^{-2}y} \cdot \frac{(4xy^2)^{-1}}{x^2y}$. $\frac{2x}{y^6}$

10) 2.345×10^{-3}

10. Write 0.002345 in scientific notation.

11. Evaluate $(2.4 \times 10^{-3})(3 \times 10^{8})$ without a calculator. Write the result in *decimal* form. 720,000

12. The projected worth (in millions of dollars) of a large company is modeled by the equation $y = 216(1.12)^x$. The variable x represents the number of years since 1993. What is the projected annual percent of growth, and what should the company be worth in 2004?

$216(1.12)^{11} = \$751,366,799$

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Algebra 1 Final Exam Review (Spring) $2100(1-.06)^6$

13. The enrollment at Alpha-Beta School District has been declining 6% each year from 1994 to 2000. If the enrollment in 1994 was 2100, find the 2000 enrollment. Use an exponential decay model. 1449

14. Evaluate the expression. Give the exact value, if possible; otherwise, approximate to two decimal places. $-\sqrt{\frac{49}{144}}$ $-\frac{7}{12}$

15. Solve: $x^2 = 64$ ± 8

16. An object is dropped from an initial height of s feet. The object's height at any time t, in seconds, is given by $h = -16t^2 + s$. How long does it take for an object dropped from 5000 feet to hit the ground? Round your result to two decimal places.

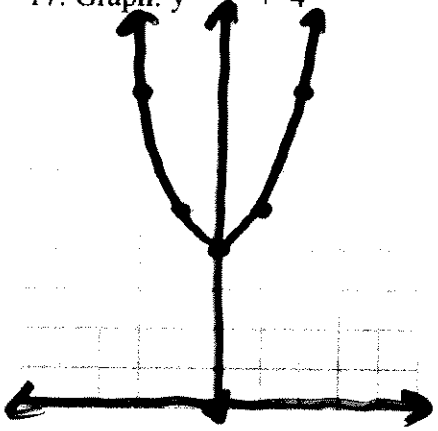
$t = 17.7$ sec.

$0 = -16t^2 + 5000$

$16t^2 = 5000$

$t^2 = 312.5$

17. Graph: $y = x^2 + 4$



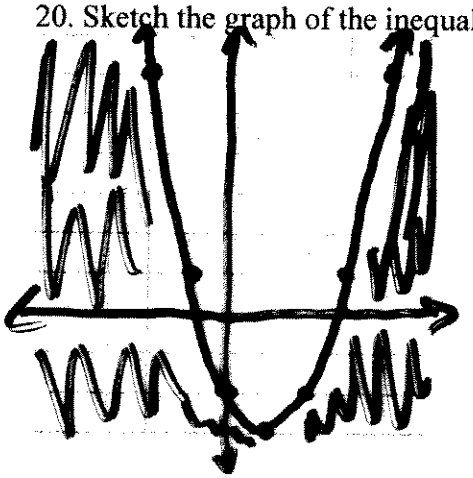
x	y
-3	
-2	
-1	
0	4
1	
2	
3	

$\frac{-b}{2a}$

18. Solve: $x^2 - 3x - 8 = 0$ 4.7, -1.7

19. Determine the number of solutions of the equation: $3x^2 - 11x + 1 = 0$ 2

20. Sketch the graph of the inequality. $y \leq x^2 - 2x - 2$



$y = x^2 - 2x - 2$

$\frac{-b}{2a} = \frac{-(-2)}{2(1)}$

x	y
-1	1
0	-2
1	-3
2	-2
3	1
4	6

21. Decide whether the point is a solution for the inequality. $y \leq x^2 - 2x - 2$ (3,-1) YES

22. Simplify: $(-2x^3 - 3x^2) - (-2x^3 + 9x) + (2x^3 + 1)$ $2x^3 - 3x^2 - 9x + 1$

23. Subtract: $(-2x^3 - 3x^2 + 2) - (-3x^3 + 4x + 1)$ $x^3 - 3x^2 + 4x + 1$

Multiply:

24. $(x + 7)(x - 7)$ $x^2 - 49$

25. $(2x - 1)(3x^2 + x - 3)$ $6x^3 - x^2 - 7x + 3$

26. Write $(x + 3)^2$ as a trinomial. 26) $x^2 + 6x + 9$

27. State the x-intercepts of the graph of the equation. Then find the coordinates of the vertex.

$y = (x+3)(x - 5)$

x-int: $-3, 5$ vertex $(1, -16)$

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28. Factor: $x^2 + 4x - 5$ $(x+5)(x-1)$

29. Factor: $2x^2 + 5x - 7$ $(2x+7)(x-1)$

30. Solve the equation: $2x^2 + 5x - 7 = 0$ 30) $-\frac{7}{2}, 1$

31. Solve the proportion $\frac{x+2}{5} = \frac{2x-3}{6}$ $x = 6.75$

32. What percent of 16 is 13? 81.25%

33. At the end of the summer, lawn furniture selling at a market price of $560 is on sale for 33% off. What is the discount? $184.80

34. x and y vary inversely. If $x = 3$ when $y = 7$, find an equation relating x and y. $y = \frac{21}{x}$

35. Simplify the expression $\frac{x^2-25}{3x+15}$ $\frac{x-5}{3}$ $\frac{(x-5)(x+5)}{3(x+5)}$

36. Simplify the expression $\frac{3}{x+4} \cdot \frac{3x-12}{9(x+2)}$ $\frac{1}{x+2}$ $\frac{3}{x-4} \cdot \frac{3(x-4)}{9(x+2)}$

37. Divide: $\frac{x^2-4x+3}{2x} \div \frac{x-1}{2}$ $(x-3)(x-1)$ $\frac{x-3}{x}$

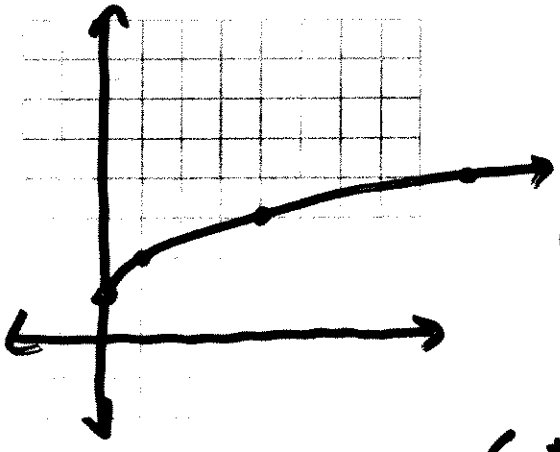
38. Add: $\frac{x+6}{x+1} + \frac{4}{2x+3}$ 38) $\frac{2x^2+19x+22}{(x+1)(2x+3)}$

39. Subtract: $\frac{4}{x+4} - \frac{7}{x-2}$ $\frac{-3(x+12)}{(x+4)(x-2)}$

40. Divide: $2x^2 - x + 4$ by $3x - 6$. 40) $\frac{2}{3}x + 1 + \frac{10}{3(x-2)}$

41. Solve: $\frac{3}{x+4} + \frac{4}{x} = \frac{-5}{x^2+4x}$ -3

42. Graph: $f(x) = \sqrt{x} + 1$



x	y
0	1
1	2
4	3
9	4

43. Simplify: $4\sqrt{2} + \sqrt{36} - \sqrt{18}$ $6 + \sqrt{2}$ $4\sqrt{2} + 6 - 3\sqrt{2}$

44. Simplify the radical expression: $\sqrt{\frac{300}{27}}$ $\frac{10}{3}$ $\frac{10\sqrt{3}}{3\sqrt{3}}$

45. Solve: $\sqrt{2x-4} = 64$ 2050 $2x - 4 = 4096$

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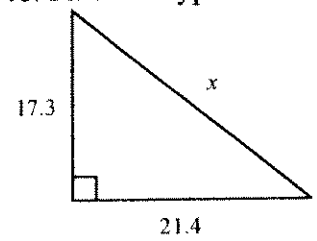
46. Find the hypotenuse of the triangle. Round your result to one decimal place.



$(17.3)^2+(21.4)^2=x^2$

$x=27.5$

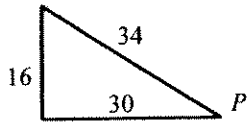
$x^2+11^2=30^2$

47. A cable 30 feet long runs from the top of a utility pole to a point on the ground 11 feet from the base of the pole. How tall is the utility pole? 27.9 ft

48. Determine whether the given lengths are the sides of a right triangle: 35, 38, 15 NO

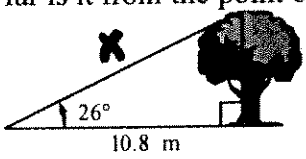
49. Determine the coordinates of the midpoint of $\overline{DG}$ and find the distance DG for the points $D(2,3)$ and $G(9,5)$ ↳ (5.5, 4) ↳ $\sqrt{53} \approx 7.28$

50. Find cos P. Round your result to the nearest hundredth.



.88 $\cos P = \frac{30}{34} = \frac{15}{17} \approx$ _____

51. At a distance of 10.8 meters from a tree, the angle of elevation to the top of the tree is 26°. How far is it from the point on the ground to the top of the tree? Round your result to the nearest tenth.



$\cos 26 = \frac{10.8}{x}$ $x = 12.0$ m

Formulas:

$Y = C(1 + r)^t$

$Y = C(1 - r)^t$

$x = \frac{-b}{2a}$

$x = b^2\text{-}4ac$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$\frac{P}{100} = \frac{is}{of}$

$a^2 + b^2 = c^2$

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$

$\sin A = \frac{O}{H}$

$\cos A = \frac{A}{H}$

$\tan A = \frac{O}{A}$