

**Intermediate Algebra 1-2
Review for Final Exam**

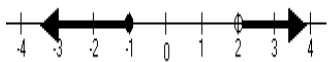
Name _____

1. Solve for t in the formula: $A = P(1 + rt)$ _____

2. If x varies directly as y and $x = 20$ when $y = 8$, what will x equal when $y = 12$? _____

3. Find the constant of variation if x varies jointly as y and the square root of z and inversely as t, when $x = 10$, $y = 8$, $z = 9$ and $t = 5$. _____

4. Solve for a: $|2a + 5| = 19$ _____

5. Which compound inequality is represented by the given graph:  _____

6. Chris has 8 mystery novels, 5 romance novels, and 4 historical novels in her library. Sue chose 2 books to borrow at random. What is the probability that she chose a romance novel and a mystery novel in that order? _____

7. How many different ways can 8 students be seated around a circular conference table? _____

8. Write the expanded form and evaluate the expression: ${}_8C_3$ _____

9. Find the product of $6x^2y(3xy^2 - 2xy + x^2y^4)$ _____

10. Find the quotient of $3x + 2 \overline{)3x^4 - 4x^3 - x^2 - 16x - 12}$ _____

11. Express as a fraction in lowest terms: $\frac{6x + 6y}{x^2 - y^2} \cdot \frac{5x - 5y}{24}$ _____

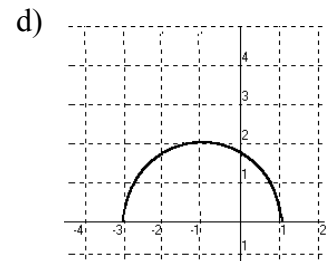
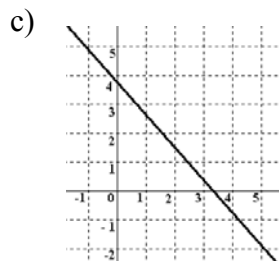
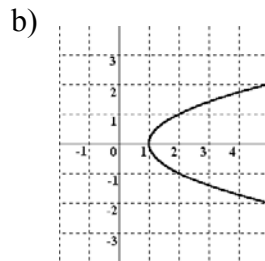
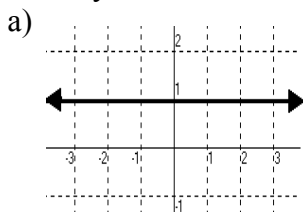
12. Express as a fraction in lowest terms: $\frac{5c + 5}{6c} + \frac{3c - 3}{2c}$ _____

13. Factor completely: $6ax^2 + ax - 15a$ _____

14. Factor completely: $x^6 - 729$ _____

15. Find the value of k if $x - 3$ is a factor of $4x^2 - 15x + k$ $k =$ _____

16. Identify each as a function or not a function:

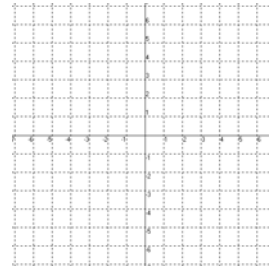


17. Find the inverse of $y = \frac{5}{8}x - 6$

18. For what values of x will the function $f(x) = \sqrt{3x+6}$ be real ?

19. If $f(x) = 2x + 5$ and $g(x) = 4x - 2$, then what is $f[g(x)]$?

20. Sketch the graph of $y = 2^{x+1}$.



21. Solve for x : $\frac{x}{x-1} + \frac{2x-3}{x-1} = 2$

22. Solve for x : $\frac{4}{x+5} = \frac{3}{x+2}$

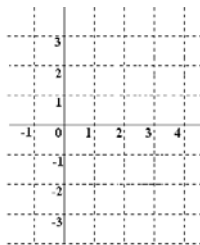
23. Solve: $3x^2 - 7x - 20 = 0$

24. Sketch each of the following functions that are described on a coordinate system

a) a positive quadratic with one root

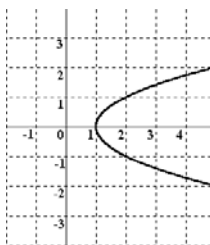
b) a positive quadratic with no roots

c) a negative quadratic with 2 roots



25. What is the domain and range of each of the following?

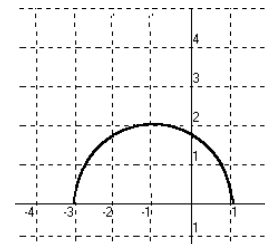
a)



b) The function given as

$$f(x) = \frac{x-1}{x+1}$$

c)



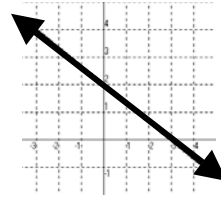
26. Find the sum of $5\sqrt{3} + \sqrt{12} - \sqrt{27}$

27. a) What is the product of $(2 + 5i)(2 - 5i)$?

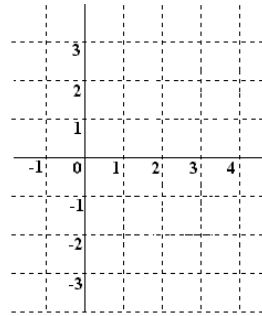
b) What is the conjugate of $4 + 3i$?

28. What is the distance between the points $(3, 7)$ and $(-2, 12)$ in simplest form?

29. What is the equation of the line given by the graph?



30. Sketch the graph of the system:
 $3x + y \geq 3$
 $x + y \leq 3$



31. Find the equation of the line perpendicular to $y = 2x + 9$ and has a y-intercept of -7 .

32. Simplify and write with positive exponents: $\left(\frac{12m^2y}{5r^{-2}}\right)\left(\frac{3mr}{5y}\right)^{-2}$

33. Simplify the expression: $36^{\frac{3}{2}}$

34. Simplify: $\log_2 16$

35. Solve for x: $5x^{\frac{1}{4}} = 15$

36. Which of these functions represents exponential decay and why? a) $f(x) = (-2)^x$ b) $f(x) = (2)^{-x}$

37. Solve and express the answer with 3 decimal places: $3^{x-1} = 12$

38. Write as a single logarithm: $3 \log_5 8 + \log_5 9 - \frac{1}{2} \log_5 3$

39. What is the value of t_8 if $t_n = n! + 2^n$

40. The population of New Zealand was 3,424,000 at the end of 1993, with an annual growth rate of 1.3%. If the population continued to grow at that rate, what would you expect the population to be at the end of the year 2003?

41. James's grandfather deposited \$5,000 into a savings account at a rate of 3.8% compounded continuously on the day that he was born. On his 18th birthday, he was given the money in that account. How much was he given? _____

42. Evaluate the expression: $\sum_{x=1}^{20} (3x - 1)$ _____

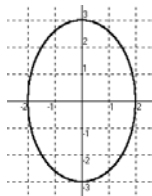
43. What is the 5th term of the expansion $(2x + y)^6$? _____

44. Write the inverse of the matrix $\begin{bmatrix} 4 & 5 \\ 2 & 3 \end{bmatrix}$ _____

45. Given $A = \begin{bmatrix} 5 & -2 \\ -1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} -3 & 1 \\ 2 & \frac{1}{2} \end{bmatrix}$ evaluate: a) $A + B$ _____ b) AB _____ c) BA^{-1} _____

46. Write the equation of the hyperbola with its center at the origin, with vertices at $(3, 0)$ and $(-3, 0)$, and asymptotes whose slopes are $\pm \frac{2}{3}$ _____

47. Write the equation of the ellipse in the given graph. _____



48. What is the name of the conic that is determined by the equation: $4x^2 - 8x + 5y - 10 = 0$? _____

49. Solve the system of equations given as $y = 2x^2 - 8x$ and $y = 3x - 12$ _____

50. What is the vertex of the parabola given as $f(x) = -4x^2 + 8x - 5$? _____