CUMULATIVE REVIEW
(Section 6.7 through Chapter 9)

Name _____

Answer:

1. A group of 9 students are to make a presentation on 3 issues. In how many ways can this assignment be made?

2. A traveler can visit 4 of 6 cities. An itinerary for the trip is a list of the 4 cities in the order to be visited. How many different itineraries are there for the trip?

3. Expand $(2x + 3)^4$

4. Find the 5th term of $(x - 2y)^{12}$

Simplify:

5. $\sqrt{9x^{10}}$

6. $\sqrt[4]{x^{18}y^4}$

7. $\dfrac{3}{\sqrt{5}}$

8. $\dfrac{\sqrt[3]{192x^8}}{\sqrt[3]{3x}}$

9. $\dfrac{4}{3\sqrt{3}-2}$

10. $27^{\frac{-2}{3}}$

Multiply and simplify:

11. $\sqrt[3]{25xy^8} \cdot \sqrt[3]{5x^4y^3}$ **12.** $\sqrt{18x^3} \cdot \sqrt{2x^2y^3}$ **13.** $x^{\frac{1}{6}} \cdot x^{\frac{1}{3}}$

Solve:

14. $7 + \sqrt{2x-1} = 10$ **15.** $(4x + 3)^{\frac{2}{3}} = (16x + 44)^{\frac{1}{3}}$ **16.** $\sqrt{2x-1} = x - 8$

Let $f(x) = 2x^2 + 3$ and $g(x) = 3x - 1$

17. Find $f(x) - g(x)$

18. Find $f(x) \cdot g(x)$

19. Find $(f \circ g)(x)$ and $(g \circ f)(x)$

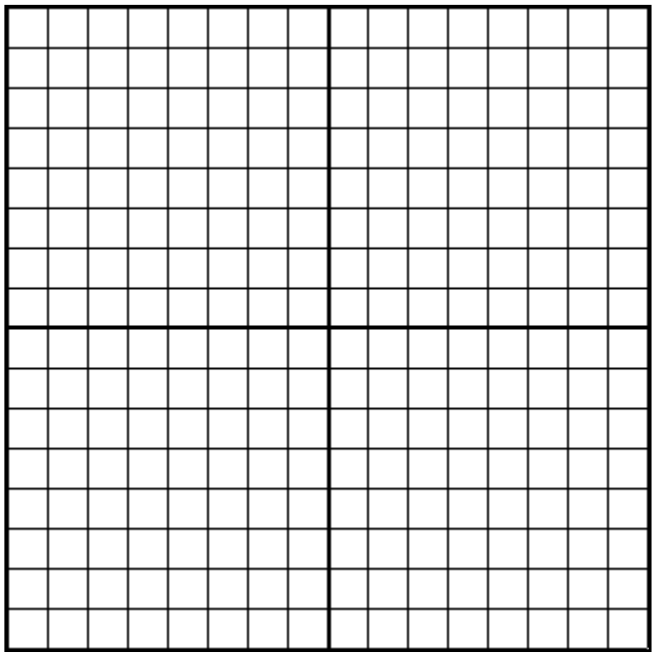
20. Find $f(g(2))$ and $g(f(2))$

21. Find the inverse of $g(x)$; is the inverse a function?

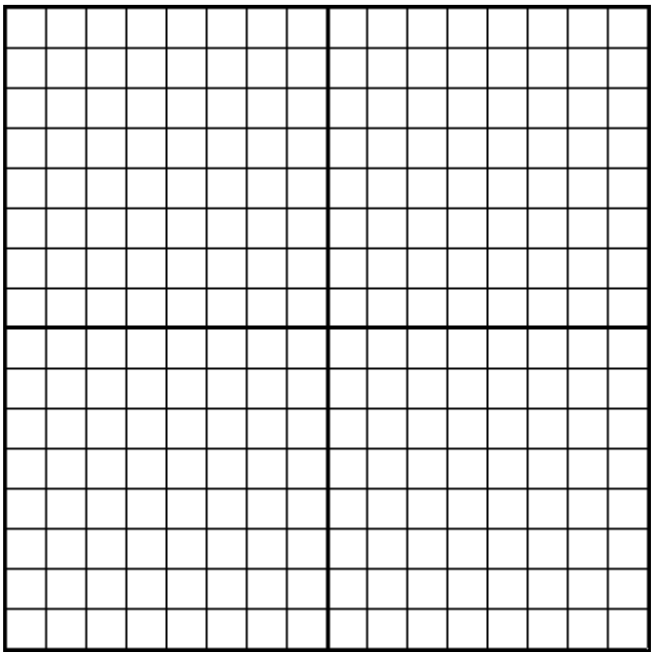
22. Find $(g^{-1}(g(10))$

Graph:

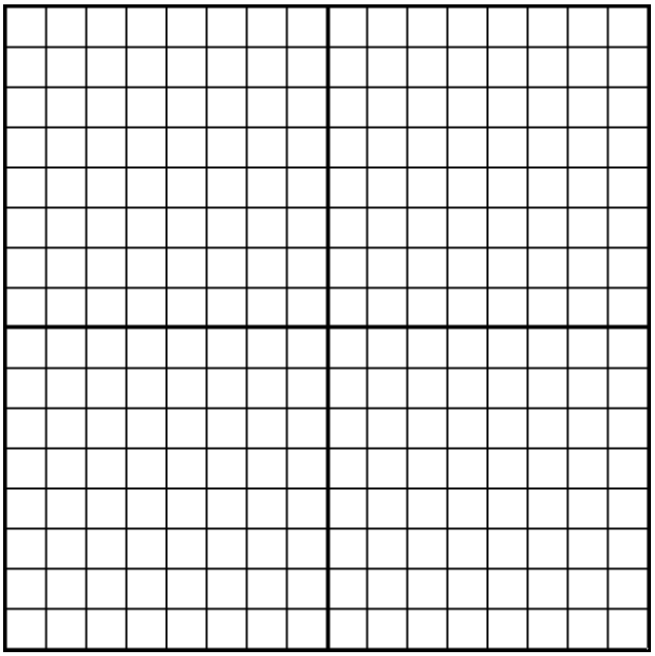
23. $y = x^2 - 2$ and its inverse



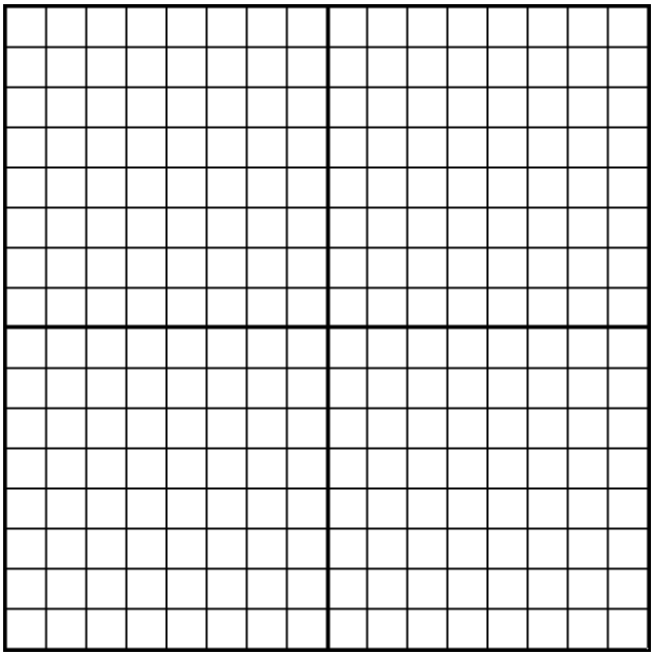
24. $y = 3^x$



25. $y = \log_4 x$



26. $y = \frac{1}{x}$



Answer:

27. Find the amount in a continuously compounded account if you invest \$950 at an annual rate of 6.5% for 10 years.

28. An investment company promises to double your money in 14 years. Assuming continuous compounding of interest, what rate of interest is needed?

29. An element has a half-life of 30 hours. Write an exponential function for a 100 mg sample. Find the amount of the element remaining after 50 hours.

Evaluate; round to nearest ten-thousandths if necessary:

30. $3 \log_3 3 - \log_3 3$

31. $\log_9 \frac{1}{3} + 3 \log_9 3$

32. $\frac{1}{2} \log_5 1 - 2 \log_5 5$

33. $7^{x-3} = 25$

34. $6^{3x+1} = 215$

Solve; round to nearest ten-thousandths if necessary:

35. $\log_2 4x = 5$ **36.** $\ln 3x = 6$ **37.** $e^{3x} = 12$

Do:

38. Suppose y varies directly as x and inversely as the square of z. When $x = 35$ and $y = 7$, the values of z is 50. Write the function that models the relationship and find z when $x = 5$ and $y = 1$.

Simplify:

39. $\dfrac{x^2 + x - 6}{x^2 + 3x}$

40. $\dfrac{y^2 + 5y + 4}{y^2 - 49} \div \dfrac{2y^2 + 5y - 12}{y^2 + 9y + 14}$

41. $\dfrac{m}{m+3} - \dfrac{6m}{m^2 - 9}$

42. $\dfrac{\dfrac{2y}{2y+1} - 1}{1 - \dfrac{2y}{2y-1}}$

Solve:

43. $\frac{4}{3x+3} = \frac{12}{x^2-1}$

44. $\frac{1}{4x} - \frac{3}{4} = \frac{7}{x}$

45. $\frac{3}{x+5} + \frac{-2}{x-5} = \frac{-4}{x^2-25}$