Algebra 2 – Chapter 7 Test Review

Name: _____ Hour: _____

7.1 Convert the following expressions to either Radical or Rational Exponent form. Simplify exponents if possible.

1. $\sqrt[6]{11^3}$

4. $8^{\frac{3}{4}}$

2. $6^{\frac{4}{9}}$

5. $\sqrt[7]{19^2}$

3. $\sqrt{41}$

6. $23^{\frac{7}{2}}$

7.1 Evaluate the expression. (Pre-AP: Do these by hand)

7. $27^{\frac{2}{3}}$

9. $64^{\frac{1}{3}}$

8. $\sqrt[3]{125}$

10. $8^{\frac{4}{3}}$

7.1 Simplify the following expressions. (Pre-AP: Do 14-16. Regular Algebra 2: skip 14-16)

11. $\sqrt[3]{16}$

14. $\sqrt[4]{16x^4y^7z}$

12. $\sqrt[2]{300}$

15. $\sqrt[5]{2xy^{11}z^{10}}$

13. $\sqrt[3]{81}$

16. $\sqrt[3]{128x^{10}y^5}$

7.2 State the transformations of the given functions. You do NOT have to graph the functions.

17. $f(x) = \sqrt{x+2} - 1$ Transformations: _____

18. $g(x) = -\sqrt[3]{x-5}$ Transformations: _____

19. $k(x) = \frac{1}{2}\sqrt[3]{x+1} + 6$ Transformations: _____
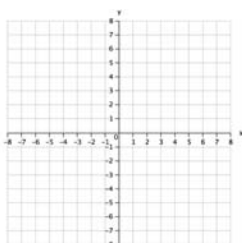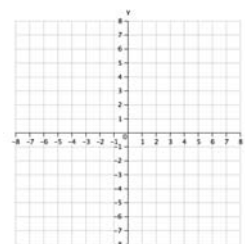
20. $h(x) = -3\sqrt{x} - 4$ Transformations: _____

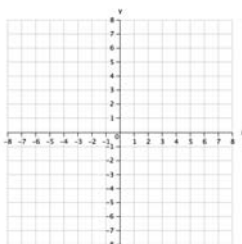**7.2 Graph the following functions.**

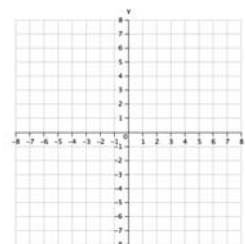21. $f(x) = -\sqrt[3]{x} - 3$

22. $f(x) = \frac{1}{2}\sqrt{x+2}$

23. $f(x) = \sqrt{x+3} - 4$

24. $f(x) = -2\sqrt[3]{x-1} + 3$

7.2 Give a function that would have the following transformations.

25. Cube root function reflected about the x-axis and shifted up 7 units.

Function: _____

26. Square root function vertically shrank by $\frac{1}{3}$, shifted left 5 and down 1.

Function: _____

27. Cube root function vertically stretched by 2, reflected about the x-axis and shifted right 9 units.

Function: _____

28. Square root function shifted up 5 and left 11.

Function: _____

7.3 Solve the following radical or rational equations.

29. $\sqrt{x+5} = 6$

30. $7 - \sqrt{x+1} = 5$

31. $\sqrt[3]{x+3} + 5 = 9$

32. $2x^{\frac{3}{2}} = 54$

33. $(4x+5)^{\frac{1}{2}} = -5$

34. $-2(5x+7)^{\frac{3}{5}} = -16$

7.4 Function Operations and Inverses

Given that $f(x) = x^2 - 4$, $g(x) = 2\sqrt{x+4}$, $k(x) = 2x$, simplify the following…

35. $f\big(k(x)\big)$

36. $k\big(f(x)\big)$

37. $g\big(f(x)\big)$

38. $f\big(g(x)\big)$

State the inverse of the following function given a set of its ordered pairs.

39. $\{(1,0),(-2,-4),(0,5),(3,9)\}$

40. $\left\{(-11,3),\left(\frac{1}{2},4\right),\left(0,-\frac{2}{3}\right),(1,2)\right\}$

41. Prove that the two functions are or aren't inverses of each other. $f(x) = \frac{2}{3}x - 14$, $g(x) = \frac{3}{2}x + 21$

42. Same instructions as #41. $f(x) = \sqrt[3]{3x-7}$, and $g(x) = \frac{x^3}{3} - 7$