Rational Exponents and Radical Functions Review (Chapter 6) Name:_____

Advanced Algebra with Trigonometry, Glawe Period:_____

Perfect Cubes: $2^3 = \mathbf{8}$ $3^3 = \mathbf{27}$ $4^3 = \mathbf{64}$ $5^3 = \mathbf{125}$ $6^3 = \mathbf{216}$	**Perfect Powers of Six:** $2^6 = \mathbf{64}$
Perfect Powers of Four: $2^4 = \mathbf{16}$ $3^4 = \mathbf{81}$ $4^4 = \mathbf{256}$ $5^4 = \mathbf{625}$	**Perfect Powers of Seven:** $2^7 = \mathbf{128}$
Perfect Powers of Five: $2^5 = \mathbf{32}$ $3^5 = \mathbf{243}$	**Perfect Powers of Eight:** $2^8 = \mathbf{256}$

Evaluate the expression.

1) $125^{-2/3}$ 2) $100^{5/2}$ 3) $32^{3/5}$ 4) $\sqrt[4]{1134}$

Simplify the expression.

5) $(\sqrt{x} \cdot \sqrt[3]{x})^5$ 6) $2\sqrt[3]{64y^5} - y\sqrt[3]{8y^2}$ 7) $\sqrt[5]{64x^6y^5}$ 8) $\sqrt[4]{\frac{x^6}{4y^2}}$

Solve the following functions. Check for extraneous solutions.

9) Solve $(3x + 43)^{2/3} + 22 = 38$ 10) Solve $\sqrt{2x + 4} = x - 2$

Find the inverse of the functions.

11) $f(x) = -\frac{1}{8}x^3$ 12) $h(x) = x^2 - 3$, with the domain $[0, \infty)$

13) The euro is the unit of currency for the European Union. The number of D dollars worth one euro E can be represented by: $E = 1.13621D$ Find the inverse of the function. Then use the inverse to find the number of dollars that could be obtained for 400 euros.

Inverse equation:_____ 400 euros is worth_____dollars.

Let $f(x) = 6x^2$, $g(x) = \frac{2}{x}$, $h(x) = x^{\frac{1}{2}}$, and $j(x) = x^{\frac{5}{2}}$. Perform the indicated operation and state the domain in interval notation.

14) $h(x) - j(x)$

Domain:_____

15) $f(x) \cdot g(x)$

Domain:_____

16) $\frac{f(x)}{h(x)}$

Domain:_____

17) $f(g(x))$

Domain:_____

18) $h(f(x))$

Domain:_____

19) $g(h(x))$

Domain:_____

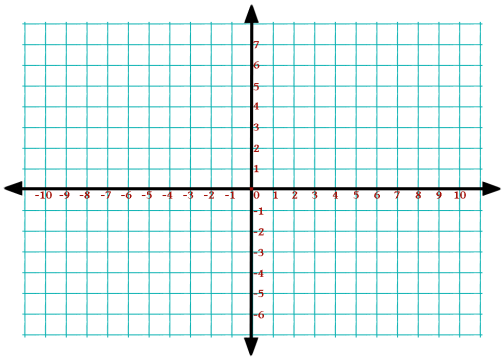
20) Is the inverse of the function $f(x) = 2x^2 - 3$ also a function? Why or why not?

21) How does the graph of $y = -2\sqrt{x+4} + 5$ compare to the graph of $y = -2\sqrt{x}$?

22) Verify that f and f^{-1} inverses using composition of functions: $f(x) = 6x - 2$ and $f^{-1}(x) = \frac{1}{6}x + \frac{1}{3}$

Fill out the table of values and graph the following functions. Choose four points that are *integers* (no decimals). Then state the domain and range of the function in **Interval notation**.

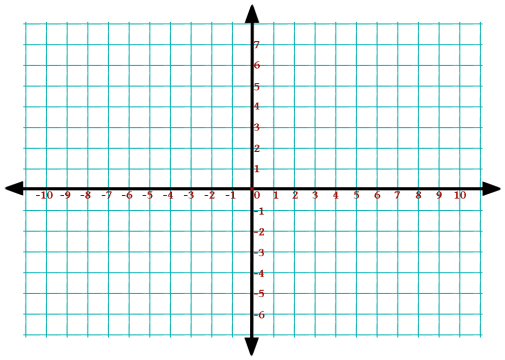
23) $y = 4\sqrt[3]{x-1} - 2$



x	y

Domain:_____ Range:_____

24) $y = -3\sqrt{x+2} + 5$



x	y

Domain:_____ Range:_____