Algebra 2 Names :_____

Group Quiz/ Review _____

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1. Explain what *negative* powers mean. Use examples to get your point across. Your explanation should be usable by someone who doesn't have a calculator.

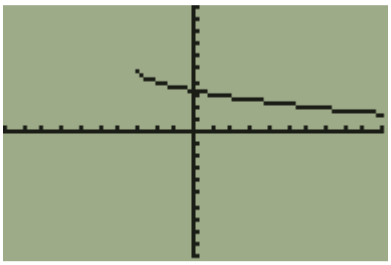
A negative power means you have to find the reciprocal of the number before (or after) raising it to any other power. For example, $4^{-2} = \left(\frac{1}{4}\right)^2 = \frac{1}{16}$ and $\left(\frac{2}{3}\right)^{-2} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$

2. Explain what *fractional* powers mean (such as $\frac{1}{5}$ and $\frac{3}{2}$). Give examples to clearly illustrate your understanding. Again, your explanation should be usable by someone who doesn't have a calculator.

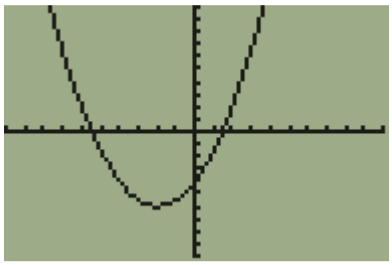
A fractional power means that you have to both raise a value to a power (the numerator) and take a root of the number (denominator). For example, $16^{\frac{3}{4}} = \left(\sqrt[4]{16}\right)^3 = 2^3 = 8$. The 3 in the exponent is a power and the 4 is a root.

3. Graph each equation.

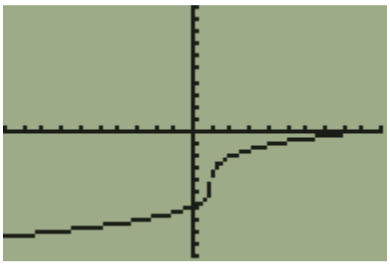
a) $y = -\sqrt{x+3}+5$



b) $y = \frac{1}{2}(x+2)^2 - 6$



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



4. Jake was in a hurry when he did these problems. Did he make any mistakes? If so, find them and clearly show all corrections.

a)

$-3\sqrt{x+4}-9=0$

$-3\sqrt{x+4}=9$

$\sqrt{x+4}=-3$

$x+4=9$

$x=5$

You can list his mistake as one of two things:

1) He should have checked his answer to make sure it works. $-3\sqrt{5+4}-9=-18\neq 0$.
2) In step three $\left(\sqrt{x+4}=-3\right)$, when working with functions, the answer to a square root is always positive. This means at step 3, you can stop and say, "This is impossible which means there is <u>*no solution*</u>."

b)

$(2x-7)^{3/2}-17=10$

$(2x-7)^{3/2}=27$

$\left((2x-7)^{3/2}\right)^{2/3}=(27)^{2/3}$

$2x-7=18$

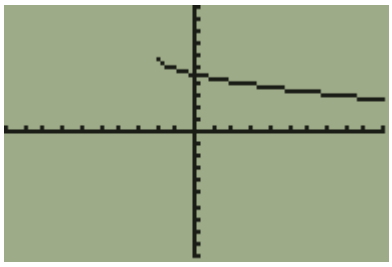
$2x=25$

$x=\frac{25}{2}$

The mistake is from line 3 to line 4 above.

$27^{\frac{2}{3}} = 9 \neq 18$. The correct answer is x = 8.

5. Sketch a graph of a radical function with a domain of $-2 \le x$ and a range of $6 \ge y$. Write the equation of your graph.



The most common equation is $y = -\sqrt{x+2} + 6$. It is *VERY* similar to 3a.

6. Ashley was tired and distracted when she did this problem. Did she make any mistakes? If so, find them and clearly show all corrections.

$$\frac{(4xy^5)^2 \cdot x^3y^{-4}}{(2x^{-2}y)^3}$$

$$\frac{8x^2y^{10} \cdot x^3y^{-4}}{2x^{-6}y^3}$$

$$\frac{8x^5y^6}{2x^{-6}y^3}$$

$$\frac{4y^3}{x}$$

Ashley made two mistakes:
1) From line 1 to line 2, $4^2 = 16$ (not 8) AND $2^3 = 8$ (not 2).

2) From line 3 to line 4, $\frac{x^5}{x^{-6}} = x^{11}$ not $\frac{1}{x}$.

The correct answer should be $2x^{11}y^3$.

7. Two Jesse's were working together. They each did the following problem, but got different answers. Who is correct? How do you know?

a)

$$\left(27x^{\frac{3}{2}}y^{-\frac{1}{2}}\right)^{-\frac{2}{3}}$$

$$-18x^{-1}y^{\frac{1}{3}}$$

$$\frac{-18y^{\frac{1}{3}}}{x}$$

b)

$$\left(27x^{\frac{3}{2}}y^{-\frac{1}{2}}\right)^{-\frac{2}{3}}$$

$$81x^{-1}y^{\frac{1}{3}}$$

$$\frac{81y^{\frac{1}{3}}}{x}$$

They are both wrong because $27^{-\frac{2}{3}} = \frac{1}{9}$ (not -18 or 81).

8. Tanner would like to know how to simplify radical expressions. Describe how to simplify the following so that Tanner can clearly follow your directions.

a) $-2\sqrt{8x^5y^{10}} = -4x^2y^5\sqrt{2x}$

b) $4\sqrt[4]{243x^{11}y^{25}} = 12x^2y^6\sqrt[3]{3x^3y}$

There are several ways to simplify these. The most basic (albeit not always the best) method involves a factor tree. For more details, consult your book, notes, or the internet.