November 1, 2011

No Warm-Up! :)

Get out ANYTHING that needs to still be corrected...

11/1 - Simplifying Square Roots

$\sqrt{4} = 2$

$\sqrt{25} = 5$

$\sqrt{49} = 7$

$\sqrt{121} = 11$

Why??

If the $\sqrt{}$ is printed, it is considered a "principle square root" which means ONLY POSITIVE!

What if it's not a perfect square?

Method 1:

$\sqrt{24}$

$4 \cdot 6$

$2 \cdot 2 \quad 2 \cdot 3$

$= 2\sqrt{2 \cdot 3}$

$= 2\sqrt{6}$

$\sqrt{80}$

$8 \cdot 10$

$4 \cdot 2 \cdot 2 \cdot 5$

$2 \cdot 2 \cdot 2 \cdot 5$

$= 2 \cdot 2\sqrt{5}$

$= 4\sqrt{5}$

Method 2:

$\sqrt{24}$

$= \sqrt{4 \cdot 6}$

$= \sqrt{4} \cdot \sqrt{6}$

$= 2\sqrt{6}$

$\sqrt{80}$

$= \sqrt{16 \cdot 5}$

$= 4\sqrt{5}$

$= \sqrt{4 \cdot 20}$

$= 2\sqrt{20}$

$= 2\sqrt{4 \cdot 5}$

$= 2 \cdot 2\sqrt{5}$

$= 4\sqrt{5}$

Perfect Squares

4
9
16
25
36
49
64
81
100
121
144
169
196
225

What about variables??

$\sqrt{x^2} = |x|$

$\sqrt{x^3} = x\sqrt{x}$

$\sqrt{x^4} = x^2$

$\sqrt{x^5} = x^2\sqrt{x}$

$\sqrt{x^6} = |x^3|$

$\sqrt{x^{20}} = x^{10}$

$\sqrt{x^{18}} = |x^9|$

$\sqrt{x^{15}} = x^7\sqrt{x}$

Rules:

$$\sqrt{x^{even}} = x^{even} \qquad \sqrt{x^{even}} = \left|x^{odd}\right|$$

$$\sqrt{a^2b^3c^{10}} \qquad \sqrt{u^5v^4w^8}$$

$= |a| \cdot b \cdot |c^5| \sqrt{b}$ $= u^2 v^2 w^4 \sqrt{u}$ =

$$\sqrt{60x^{16}y^{30}z^{21}}$$

$4 \cdot 15$

$= 2x^8 |y^{15}| z^{10} \sqrt{15z}$

$2x\sqrt{32x^4y^6}$

$= 2x \cdot 4x^2|y^3|\sqrt{2}$

$= 8x^3|y^3|\sqrt{2}$

$4mn^2\sqrt{24m^6n^5}$

$= 4mn^2 \cdot 2|m^3|n^2\sqrt{6n}$

$= 8m^4n^4\sqrt{6n}$

HOMEWORK:

Worksheets 1 and 2

Pink #1-20

Gold #1-18

due Thursday