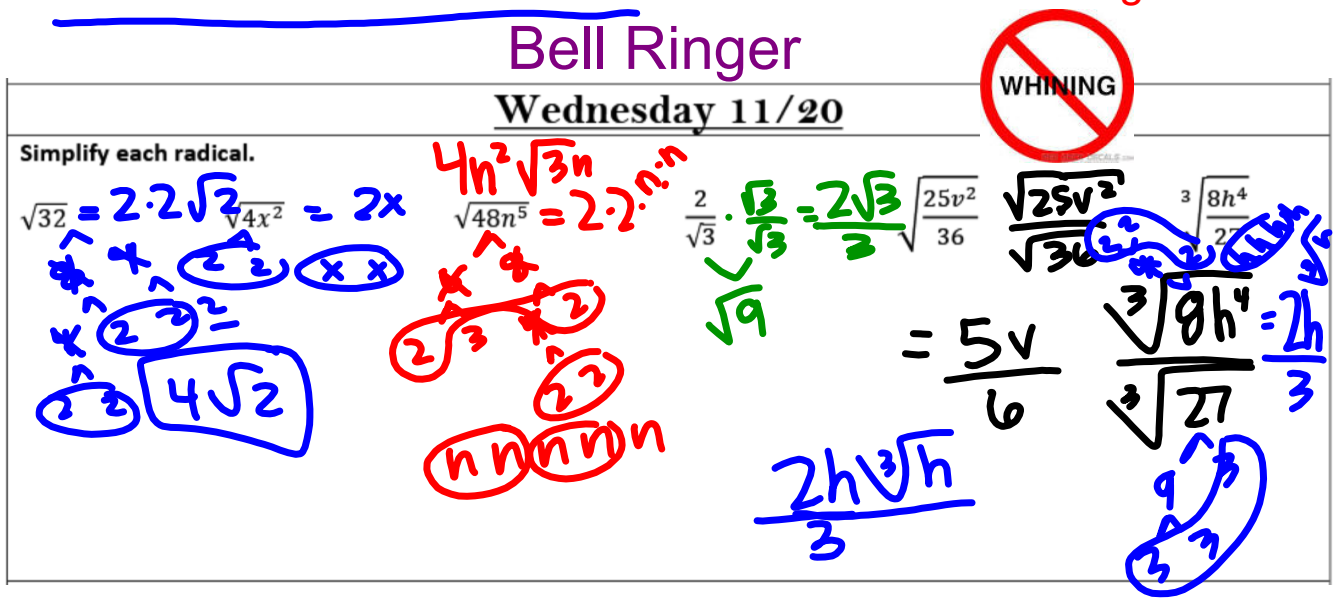
Hand in disclosure - due tomorrow

Find and sit in assigned seat!

Bell Ringer



Wednesday 11/20

Simplify each radical.

$\sqrt{32} = 4\sqrt{2}$

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

$\sqrt{48n^5} = 4n^2\sqrt{3n}$

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

$\sqrt{\frac{25v^2}{36}} = \frac{5v}{6}$

$\frac{\sqrt{25v^2}}{\sqrt{36}}$

$\sqrt[3]{\frac{8h^4}{27}} = \frac{2h\sqrt[3]{h}}{3}$

Rationalizing the Denominator. The process by which a fraction is rewritten so that the denominator contains only rational numbers.

AKA get all roots out of the denominator!!!

$$\frac{a}{\sqrt{b}}$$

Rationalize the denominator example...

$$\frac{\sqrt{5}}{\sqrt{3n}} \cdot \frac{\sqrt{3n}}{\sqrt{3n}} = \frac{\sqrt{5 \cdot 3n}}{\sqrt{3n \cdot 3n}} = \frac{\sqrt{15n}}{\sqrt{9n^2}} = \frac{\sqrt{15n}}{3n}$$

$\sqrt{9n^2} = 3n$ since $3 \cdot 3 = 9$ and $n \cdot n = n^2$

Simplify each expression.

13. $\frac{1}{\sqrt{5}}$ $\frac{\sqrt{5}}{\sqrt{5}}$

$= \frac{\sqrt{5}}{5}$

14. $\frac{\sqrt{10}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$\frac{\sqrt{30}}{\sqrt{9}} = \frac{\sqrt{30}}{3}$

30
10 3
2 5

15. $\frac{7}{\sqrt{2x}}$ $\frac{\sqrt{2x}}{\sqrt{2x}}$

$\frac{7\sqrt{2x}}{2x}$

$\sqrt{4x^2}$

16. $\sqrt{\frac{2y^2}{3}} = \frac{\sqrt{2y^2}}{\sqrt{3}}$

$\frac{\sqrt{2y^2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$\frac{\sqrt{6y^2}}{3}$

$y \cdot y$

$= \frac{y\sqrt{6}}{3}$

How to rationalize the denominator when it's a cube root...

$$\frac{2}{\sqrt[3]{9}} \cdot \frac{\sqrt[3]{3}}{\sqrt[3]{3}} = \frac{2\sqrt[3]{3}}{\sqrt[3]{27}} = \frac{2\sqrt[3]{3}}{3}$$

$3 \cdot 3$

$3 \cdot 3 \cdot 3$

$$\frac{5}{\sqrt[3]{36}} \cdot \frac{\sqrt[3]{6}}{\sqrt[3]{6}} = \frac{5\sqrt[3]{6}}{\sqrt[3]{216}} = \frac{5\sqrt[3]{6}}{6}$$

$$\frac{-10}{\sqrt[3]{16}} \cdot \frac{\sqrt[3]{4}}{\sqrt[3]{4}} = \frac{-10\sqrt[3]{4}}{\sqrt[3]{64}} = \frac{-10\sqrt[3]{4}}{4}$$

The conjugate has the opposite sign between the 2 terms. It can be used to simplify expressions when there are two terms in the denominator.

Simplify $\frac{7}{2-\sqrt{3}} \cdot \frac{2+\sqrt{3}}{2+\sqrt{3}}$

$4 + 2\sqrt{3} - 2\sqrt{3} - 3 = 1$

What would you multiply by to rationalize the denominator??

$$\frac{8}{1+\sqrt{3}} \cdot \frac{1-\sqrt{3}}{1-\sqrt{3}} \qquad \frac{\sqrt{13}}{\sqrt{5}-2} \cdot \sqrt{6}+2 \qquad \frac{12}{\sqrt{2}+\sqrt{7}} \cdot \sqrt{2}-\sqrt{7}$$

due tomorrow

4.1 Day 1 hw

pg 197-198 #s 1-3, 13, 17-31 odd, 35, 37, 45-53 odd

Essential Question:

How do you evaluate, add, subtract and multiply radicals?

Evaluate the function for x = 3. Write your answer in simplest form and in decimal form rounded to the nearest hundredth.

$$g(x) = \frac{\sqrt{2x}}{4 + \sqrt{3x}}$$

$$= \frac{\sqrt{6}}{4+\sqrt{9}} = \frac{\sqrt{6}}{4+3} = \frac{\sqrt{6}}{7}$$

$$h(x) = \sqrt{\frac{4x}{5x^2 + 2}}$$

$$= \frac{\sqrt{12}}{\sqrt{47}}$$

12 = 3 × 2 × 2

$$\frac{2\sqrt{3}}{\sqrt{47}}$$

The distance *d* (in miles) that you can see to the horizon with your eye level *h* feet above the water is given by $d = \sqrt{\frac{3h}{2}}$. How far can you see when your eye level is 5 feet above the water?

How far can you see when your eye level is 35 feet above the water?

Square Roots and Addition

Is $\sqrt{36}+\sqrt{64}$ equal to $\sqrt{36+64}$?

$= 6+8$ $= \sqrt{100}$

$= 14$ $= 10$

In general, is $\sqrt{a}+\sqrt{b}$ equal to $\sqrt{a+b}$?

$\sqrt{7}+\sqrt{5} \neq \sqrt{12}$

Square Roots and Subtraction

Is $\sqrt{64} - \sqrt{36}$ equal to $\sqrt{64-36}$?

$8 - 6$

2

$\sqrt{28}$

In general, is $\sqrt{a} - \sqrt{b}$ equal to $\sqrt{a-b}$?

To Add or subtract the radicals:

We can only combine like radicals. To be alike the radicand (number under the square root) needs to be the same.

$-2x + 8x = 6x$

$-2\sqrt[3]{6} + 8\sqrt[3]{6}$

$= 6\sqrt[3]{6}$

$+7y - 20y$

$7\sqrt{3} - 5\sqrt{48}$

$7\sqrt{3} - 20\sqrt{3}$

$= -13\sqrt{3}$

Simplify

$5\sqrt{7} + \sqrt{11} - 8\sqrt{7}$

$-3\sqrt{7} + \sqrt{11}$

Simplify

$$10\sqrt{5}+\sqrt{20}$$

$20 = 2 \cdot 10$

$20 = 2 \cdot 2 \cdot 5$

$20 = 2^2 \cdot 5$

$10\sqrt{5} + 2\sqrt{5}$

$12\sqrt{5}$

Simplify

$6\sqrt[3]{x} + 2\sqrt[3]{x}$

$= 8\sqrt[3]{x}$

Simplify

$$3\sqrt{2} - \sqrt{6} + 10\sqrt{2}$$

$13\sqrt{2} - \sqrt{6}$

Simplify

$$4\sqrt{7} - 6\sqrt{63}$$

Simplify

$$4\sqrt[3]{5x} - 11\sqrt[3]{5x}$$

Multiplication of radicals: We multiply the coefficients (numbers outside radicals) together and multiply the radicands (numbers inside the radicals) together.

"Outside times Outside and Inside times Inside"

Just like this!

$2x(5y + 3)$

$10xy + 6x$

$2\sqrt{3}(5\sqrt{6} + 3)$

$3 \cdot 10\sqrt{18} + 6\sqrt{3}$

$30\sqrt{2} + 6\sqrt{3}$

Simplify

I do...

$$\sqrt{3}\left(8\sqrt{2}+7\sqrt{32}\right)$$

$8\sqrt{6} + 7\sqrt{96}$

$8\sqrt{6} + 28\sqrt{6}$

$= 36\sqrt{6}$

$$\left(2\sqrt{5}-4\right)^2$$

$$\sqrt[3]{-4}\left(\sqrt[3]{2}-\sqrt[3]{16}\right)$$

Simplify

We do...

- $3\sqrt{5}(-\sqrt{18}+3\sqrt{8})$

Simplify

You do w/ partner...

$$-\sqrt{6}(\sqrt{24}+4\sqrt{54})$$

Simplify

$$\sqrt{5}\left(\sqrt{3}-\sqrt{75}\right)$$

You do alone...

4.1 Day 2 hw due Friday

Pg 199 #s 65-97, skip #73

bigideasmath.com
Login w Clever
Ridgeline High (Cache County)
Login w Google