

# Welcome!

## DO NOW:

- In-person people, choose your seat for the quarter.
- Complete your **Attendance Question** in Google Classroom!
- Today we'll be **taking notes on 5.4!** (printouts are available for in-person people on the desk by the window)

**Homework:** #111 5.3 Practice due Wednesday 3/31  
#112 5.4-5.5 Practice due Wednesday 4/7  
TEST Ch 5 Friday 4/9

Topic: 5.4 Rational Exponents

EQ: How do you simplify with rational exponents?

(Fractional)

# Radicals vs. Rational Exponents

$$\overset{\text{denom}}{\rightarrow} \sqrt[n]{x^m} = x^{\frac{m}{n}} \text{index}$$

Rewrite as a simplified radical:

a)  $64^{\frac{1}{2}}$

$$\sqrt[2]{64} = \boxed{8}$$

d)  $w^{\frac{5}{8}}$

$$\sqrt[8]{w^5}$$

$$x^{m/n} = \sqrt[n]{x^m}$$

b)  $11^{\frac{1}{2}} \cdot 11^{\frac{1}{2}}$

$$\sqrt{11} \cdot \sqrt{11} = \sqrt{121}$$
$$11^{\frac{1}{2} + \frac{1}{2}} = \boxed{11}$$
$$= \boxed{11}$$

e)  $w^{-\frac{5}{8}}$

$$\frac{1}{w^{5/8}} = \frac{1}{\sqrt[8]{w^5}}$$

c)  $3^{\frac{1}{2}} \cdot 12^{\frac{1}{2}}$

$$\sqrt{3} \cdot \sqrt{12} = \sqrt{36} = \boxed{6}$$

f)  $w^{0.2}$

$$w^{1/5} = \boxed{\sqrt[5]{w}}$$

Rewrite in simplified exponential form:

g)  $\sqrt[4]{x^3}$

$x^{3/4}$

h)  $(\sqrt[5]{y})^4$

$y^{4/5}$

i)  $\sqrt[3]{(5xy)^6}$

$(5xy)^{\frac{6}{3}=2}$   
 $25x^2y^2$

j)  $(8x^{15})^{-1/3}$

$\frac{1}{(8x^{15})^{1/3}} = \frac{1}{8^{1/3} x^{15/3}}$   
 $\frac{1}{\sqrt[3]{8} x^5}$

$\frac{1}{2x^5}$

k)  $(9x^4y)^{3/2}$

$(9x^4y^{1/4})^{3/2}$   
 $9^{3/2} x^{3/2} y^{3/8}$   
 $\sqrt{9^3} x^{3/2} y^{3/8}$   
 $27x^{3/2}y^{3/8}$

l)  $(\frac{4}{64^5})^{1/2}$

$\frac{4^{1/2}}{64^{5/12}}$

$\frac{2}{64^{5/12}}$

Summary: