

2.2 Rational Exponents

Investigate Pg.76 1-4

$$x^{\frac{1}{2}} \rightarrow \sqrt{x} \qquad x^{\frac{1}{3}} \rightarrow \sqrt[3]{x}$$

4	2
9	3
16	4

$$16^{\frac{3}{4}} = \sqrt[4]{16^3}$$

4 - index

16 - radicand

$$4 \sqrt[4]{(16^3)} \quad 3 - \text{exponent}$$

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Write the following as radicals

a) $125^{\frac{2}{5}}$	b) $32^{\frac{4}{5}}$	c) $64^{\frac{5}{6}}$
$\sqrt[5]{125^2}$	$\sqrt[5]{32^4}$	$\sqrt[6]{64^5}$

Determine the EXACT value of the following

a) $64^{\frac{1}{4}}$	b) $\left(\frac{25}{4}\right)^{-\frac{1}{2}}$	c) $16^{\frac{3}{2}}$	d) $\left(\frac{9}{16}\right)^{\frac{3}{2}}$
$\sqrt[4]{64}$	$\frac{\left(\frac{4}{25}\right)^{\frac{1}{2}}}{4^{\frac{1}{2}}}$	$\frac{\sqrt[2]{16^3}}{64}$	$\frac{\left(\frac{16}{9}\right)^{\frac{3}{2}}}{= \frac{\sqrt[2]{16^3}}{\sqrt[2]{9^3}}}$
	$= \frac{2}{5}$		$= \frac{64}{27}$

Feb 17-7:31 AM

Write each expression as a power and a radical

$$a) \sqrt[4]{x^2}$$

$$x^{2/4} = x^{1/2}$$

$$\sqrt{x^1}$$

$$b) \sqrt{\sqrt{x^3}}$$

$$\left(\sqrt[2]{x^3}\right)^{1/2}$$

$$\left(x^{3/2}\right)^{1/2}$$

$$x^{3/4} \rightarrow \sqrt[4]{x^3}$$

$$c) \left(\sqrt[4]{x^4}\right)\left(\sqrt{x^5}\right)$$

$$\left(x^{4/4}\right)\left(x^{5/2}\right)$$

$$x^{1 + 5/2}$$

$$x^{7/2} \rightarrow \sqrt{x^7}$$

Feb 17-7:38 AM

Assignment: Pg. 80

1, 2, 6, 10, 16, 18, 19 ALL ODDS

Feb 17-7:34 AM