

Attendance

Simplify

$$\sqrt[4]{243} = \cancel{\sqrt[4]{\cdot 1 \cdot \cdot 3}}^{\cdot 60}$$

$$4 \overline{)243} \quad |$$

$$\begin{array}{r} 60 \\ 240 \\ \hline 3 \end{array}$$

$$\begin{aligned} i &= 1 \\ i^2 &= -1 \\ i^3 &= -i \\ i^4 &= 1 \end{aligned}$$

Ch 12 Review

① Assume all variable
are positive

$$\sqrt{4}$$

②

assume variable
are any real #

(2.)

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

$$\sqrt[3]{64x^6y^{12}}$$

assume
variables
are any
real #

$$\sqrt[4]{16x^4y^8}$$

$$\sqrt[3]{4^3x^6y^{12}}$$

$$\sqrt[4]{4x^2y^4}$$

$$\sqrt[4]{2^4}$$

$$\sqrt[4]{2^4x^4y^8}$$

$$\sqrt{2x^2y^2}$$

$$\sqrt{2^2x^2y^2}$$

$$\sqrt[3]{125x^5y^{16}}$$

additive
vars +

~~$$\sqrt[3]{500x^2y^{15}}$$~~

$$(5xy)^5 \cdot \sqrt[3]{x^2y}$$

$$\sqrt{24x^3y^8}$$

$$\begin{aligned} & \sqrt[2]{2^2 \cdot 2 \cdot 3} \cdot (x) \cdot xy \\ & 2xy^4 \cdot \sqrt{6x} \end{aligned}$$

Simplify $\sqrt{}$

Add/Sub

Mult/Divide

* fractional exponent

~~$$\frac{(2+3i)(4+i)}{(4-i)(4+i)} \rightarrow \frac{8+2i+12i+/-3}{16 - i^2 + (+1)}$$~~

~~$+1$~~

$$\frac{5+14i}{17} = \frac{5}{17} + \frac{14}{17}i$$

$a + bi$

$$\textcircled{4} \sqrt[3]{8xy} \cdot \textcircled{4} \sqrt[3]{4xy^2}$$

$$\textcircled{4} \sqrt[3]{32}$$

$$\textcircled{4} \sqrt[3]{2^4 \cdot 2 \cdot x^4 y^3}$$

$$2x \textcircled{4} \sqrt[3]{2y^3}$$

$$\begin{array}{r} 2 | 32 \\ 2 | 16 \\ 2 | 8 \\ 2 | 4 \\ \hline 2 \end{array}$$

multiply

$$1\sqrt[3]{(4\sqrt[3]{6} - \sqrt[3]{5})}$$

$$4\sqrt[3]{18} - \sqrt[3]{15}$$

$$4\sqrt[3]{(3^2) \cdot 2} - \sqrt[3]{15}$$

$$4 \cdot 3 \sqrt[3]{2} - \sqrt[3]{15}$$

$$12\sqrt[3]{2} - \sqrt[3]{15}$$

$$\sqrt[3]{x^2} \cdot \sqrt[4]{x}$$

$$x^{\frac{2}{3}} \cdot x^{\frac{1}{4}}$$

$$\frac{4}{4} \cdot \frac{2}{3} + \frac{1}{4} \cdot \frac{3}{3}$$

$$\frac{8}{12} + \frac{3}{12}$$

$$x^{\frac{11}{12}}$$

$$\textcircled{12\sqrt{x^{11}}}$$

$$\sqrt[3]{2} \times 12$$

Simplify

$$\sqrt[6]{x^{12}} = x^2$$

Subtract

$$3\sqrt{18} - 4\sqrt{32}$$

9·2 16·2

$$3\sqrt{(3^2)2} - 4\sqrt{(4^2)2}$$

$$3 \cdot 3\sqrt{2} - 4 \cdot 4\sqrt{2}$$

$$9\sqrt{2} - 16\sqrt{2}$$

$$-7\sqrt{2}$$

$$\frac{4\sqrt{64x^7}}{4\sqrt{2x^2}}$$

divide & simplify
 * Rationalize the denominator

$$\frac{\sqrt{6} \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}}$$

$$4\sqrt{64x^7} \over \sqrt{2x^2}$$

$$4\sqrt{32x^5}$$

$$\cancel{(4)(2)} \cdot 2 \cdot \cancel{(2)} \cdot x \cdot \cancel{x}$$

$$2x \cdot 4\sqrt{2x}$$

$$\frac{1}{\sqrt[3]{4x}} \cdot \frac{\sqrt[3]{2x^2}}{\sqrt[3]{2x^3}}$$

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

$$\frac{\sqrt[3]{30x}}{5}$$

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

Rationalize the denominator

$$\frac{5}{\sqrt[4]{8ab^2}} \rightarrow \frac{5}{\sqrt[4]{2^3ab^2}} \cdot \frac{\sqrt[4]{2^1a^3b^2}}{\sqrt[4]{2^1a^3b^2}}$$
$$\cdot \frac{\sqrt[4]{2^4a^4b^4}}{\sqrt[4]{2^4a^4b^4}}$$
$$\frac{5\sqrt[4]{2a^3b^2}}{2ab}$$

$$\frac{(2\sqrt{3} + \sqrt{2})(3\sqrt{2} + \sqrt{3})}{(3\sqrt{2} - \sqrt{3})(3\sqrt{2} + \sqrt{3})} \xrightarrow{\text{Rationalize den}} \frac{6\sqrt{6} + 2 \cdot 3 + 3 \cdot 2 + \sqrt{6}}{9 \cdot 2 - 3} = \frac{12 + 7\sqrt{6}}{15}$$

$$\frac{12 + 7\sqrt{6}}{15}$$

Solve

$$3 + \sqrt{2x-3} = x$$

$$\sqrt{2x-3} = x-3$$

$$(\sqrt{2x-3})^2 = (x-3)(x-3)$$

$$2x-3 = x^2 - 6x + 9$$

$$0 = x^2 - 8x + 12$$

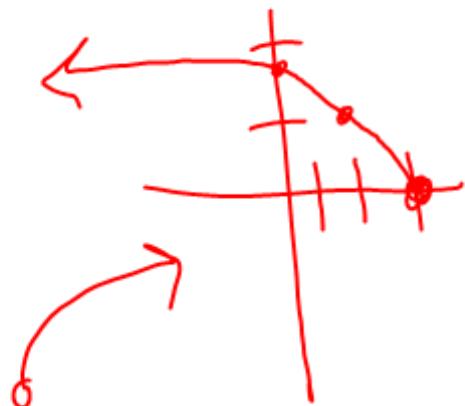
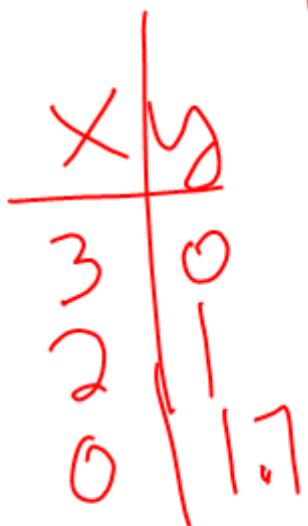
$$0 = (x-6)(x-2)$$

$$\begin{array}{l} x=6 \\ x=2 \end{array}$$

graphing

Domain

$$y = \sqrt{3-x}$$
$$3-x \geq 0$$
$$-x \geq -3$$



$$x \leq 3$$
$$(-\infty, 3]$$