Attendance

Simplify i^{243}

$i^{243} = (i^{4})^{60} \cdot i^{3}$

$= 1^{60} \cdot i^{3}$

$= 1$

60

$4\overline{)243}$

240

3

$i^{1} = i$

$i^{2} = -1$

$i^{3} = -i$

$i^{4} = 1$

Ch 12 Review

① assume all variable are positive

$\sqrt{4}$

② assume variable are any real #

12.1

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

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

assume variables are any real #

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

$4^3 \quad x^6 \quad y^{12}$

$4x^2y^4$

$|2|$

$2 \cdot x \quad y^2$

$2|x|y^2$

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

$\sqrt[3]{5^3 \cdot x^3 \cdot x^2 \cdot y^{15} \cdot y}$

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

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

$\sqrt{2^2 \cdot 2 \cdot 3 \cdot x^2 \cdot x \cdot y^8}$

$2xy^4\sqrt{6x}$

Simplify $\sqrt{\ }$

Add/sub

mult/divide

* fractional exponent

divide $\dfrac{(2+3i)(4+i)}{(4-i)(4+i)} \rightarrow \dfrac{8+2i+12i+-3}{16 \cancel{i^2} +(+1)}$

$i^2 = +1$

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

$a + bi$

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

$\sqrt[4]{32}$

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

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

2 | 32
2 | 16
2 | 8
2 | 4
2

multiply

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

$4\sqrt{18} - \sqrt{15}$

$4\sqrt{3^2 \cdot 2} - \sqrt{15}$

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

$12\sqrt{2} - \sqrt{15}$

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

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

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

$\sqrt[12]{x^{11}}$

$\rightarrow x^{\frac{8}{12}+\frac{3}{12}} \rightarrow x^{\frac{11}{12}}$

Simplify

$\sqrt[3]{\sqrt{x^{12}}}$

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

subtract

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

$9 \cdot 2 \qquad 16 \cdot 2$

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

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

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

$-7\sqrt{2}$

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

divide & simplify

* Rationalize the denominator

$$\frac{\sqrt{6x\sqrt{5}}}{\sqrt{5}\sqrt{5^4}}$$

$$\frac{\sqrt{30x}}{5}$$

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

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

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

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

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

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

$$2$$

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

Rationalize the denominator

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

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

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

Rationalize den

$$\frac{(2\sqrt{3}+1\sqrt{2})(3\sqrt{2}+1\sqrt{3})}{(3\sqrt{2}-\sqrt{3})(3\sqrt{2}+\sqrt{3})} \rightarrow \frac{6\sqrt{6}+2\cdot 3+3\cdot 2+1\sqrt{6}}{9\cdot 2-3} \qquad \frac{\quad}{15}$$

$18-3$

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

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

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

$x=6$

$x\neq 2$

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

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

$0=x^2-8x+18$

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

graphing

Domain

$y = \sqrt{3 - x}$

$3 - x \geq 0$

$-x \geq -3$

$x \leq 3$

$(-\infty, 3]$

x	y
3	0
2	1
0	1.7