

5.1-5.2 Review WS

1.) $\sqrt[4]{42m^5n^3}$

$\begin{matrix} \wedge \\ 2 & 5 & 6 \\ \wedge \\ 2 & 2 & 8 \\ \wedge \\ 4 & 7 \\ \wedge \\ 2 & 2 \end{matrix}$
(mmmmm)

$2m \sqrt[4]{mn^3}$

2.) $\sqrt[5]{224u^7v^4}$

$\begin{matrix} \wedge \\ 2 & 1 & 2 \\ \wedge \\ 2 & 5 & 6 \\ \wedge \\ 2 & 2 & 8 \\ \wedge \\ 4 & 7 \\ \wedge \\ 2 & 2 \end{matrix}$

$2u \sqrt[5]{u^2v^4}$

3.) $\sqrt[4]{80a^2b^4}$

$\begin{matrix} \wedge \\ 4 & 2 & 0 \\ \wedge \\ 2 & 2 & 4 & 5 \\ \wedge \\ 2 & 2 \end{matrix}$
(bbbb)
(a·a)

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

4.) $-7 \sqrt[4]{72ab^2c^3}$

$\begin{matrix} \wedge \\ 8 & 9 \\ \wedge \\ 4 & 2 & 3 & 3 \\ \wedge \\ 2 & 2 \end{matrix}$
(bb) (c·c·c)

$-7 \cdot 2 \cdot 3 \cdot b \cdot c \sqrt[4]{2c}$
 $-42bc \sqrt[4]{2c}$

5.) $\sqrt[6]{192p^7}$

$\begin{matrix} \wedge \\ 2 & 9 & 6 \\ \wedge \\ 2 & 4 & 8 \\ \wedge \\ 6 & 8 \\ \wedge \\ 2 & 3 & 2 & 4 \\ \wedge \\ 2 & 2 \end{matrix}$

$6 \cdot 2 \cdot p \sqrt[6]{3p}$
 $12p \sqrt[6]{3p}$

6.) $-4 \sqrt[6]{192x^6y^6z^4}$

$\begin{matrix} \wedge \\ 2 & 2 & 2 & 2 & 2 & 2 & 3 \\ \wedge \\ 2 & 2 & 2 & 2 & 2 & 2 & 3 \end{matrix}$
(x⁶) (y⁶) (z⁴)

$-4 \cdot 2 \cdot x \cdot y \sqrt[6]{3z^4}$
 $-8xy \sqrt[6]{3z^4}$

$$7.) \frac{\sqrt{35}}{\sqrt{15}} = \sqrt{\frac{35}{15}} = \sqrt{\frac{7}{3}} = \frac{\sqrt{7} \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}} = \frac{\sqrt{21}}{3}$$

$$8.) \frac{5}{\sqrt[3]{50}} \cdot \frac{\sqrt[3]{50}}{\sqrt[3]{50}} \cdot \frac{\sqrt[3]{50}}{\sqrt[3]{50}} = \frac{5 \sqrt[3]{2500}}{50} = \frac{\sqrt[3]{2500}}{10}$$

$$9.) \frac{9}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} = \frac{9 \sqrt[3]{4}}{2}$$

$$10.) \frac{9}{10-\sqrt{2}} \cdot \frac{(10+\sqrt{2})}{(10+\sqrt{2})} = \frac{90+9\sqrt{2}}{98}$$

$100 - 10\sqrt{2} + 10\sqrt{2} - 2$

$$11.) \frac{7}{8+7\sqrt{3}} \cdot \frac{(8-7\sqrt{3})}{(8-7\sqrt{3})} = \frac{56-49\sqrt{3}}{-83}$$

$$\begin{aligned} &64 - 56\sqrt{3} + 56\sqrt{3} - 49(3) \\ &64 - 147 \\ &-83 \end{aligned}$$

$$12.) -1 \sqrt[3]{6} - 3 \sqrt[3]{162}$$

$$\begin{array}{c} \sqrt[2]{81} \\ \uparrow \uparrow \\ 9 \quad 9 \\ \uparrow \uparrow \uparrow \\ \sqrt[3]{3 \cdot 3 \cdot 3} \end{array}$$

$$\begin{aligned} &-1 \sqrt[3]{6} - 3 \cdot 3 \sqrt[3]{6} \\ &-1 \sqrt[3]{6} - 9 \sqrt[3]{6} \end{aligned}$$

$$\sqrt[3]{-10 \cdot 6}$$

$$13.) -2\sqrt{24} + 3\sqrt{6}$$

$$\begin{array}{c} \uparrow \\ \boxed{6} \cdot 4 \\ \uparrow \\ \textcircled{22} \end{array}$$

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

$$-4\sqrt{6} + 3\sqrt{6}$$

$$-\sqrt{6}$$

$$14.) 2\sqrt[3]{16} + 3\sqrt[3]{2}$$

$$\begin{array}{c} \uparrow \\ 4 \cdot 4 \\ \uparrow \\ \textcircled{22} \cdot 2 \end{array}$$

$$2 \cdot 2\sqrt[3]{2}$$

$$4\sqrt[3]{2} + 3\sqrt[3]{2}$$

$$\textcircled{7\sqrt[3]{2}}$$

$$15.) (81n^4)^{3/4}$$

$$81^{3/4} \cdot n^3$$

$$\textcircled{27n^3}$$

$$16.) (b^9)^{4/3}$$

$$b^{9 \cdot (4/3)}$$

$$\textcircled{b^{12}}$$

$$17.) (a^4)^{3/2}$$

$$a^{4 \cdot (3/2)}$$

$$\textcircled{a^6}$$

$$18.) 4 \cdot a^{3/4} \cdot b^{1/3} \cdot 2 \cdot a^{3/2}$$

$$4 \cdot 2 \cdot a^{3/4 + 3/2} \cdot b^{1/3}$$

$$\textcircled{8a^{9/4}b^{1/3}}$$

$$19.) 3 \cdot m^{1/3} n^{1/2} \cdot 3 \cdot n^{1/2}$$

$$3 \cdot 3 \cdot m^{1/3} \cdot n^{1/2 + 1/2}$$

$$\textcircled{9m^{1/3}n}$$

$$20.) v \cdot u^{3/2} \cdot 2 \cdot v \cdot u^{3/4}$$

$$2 \cdot v^{1+1} u^{3/2 + 3/4}$$

$$\textcircled{2v^2u^{9/4}}$$

$$21.) (3b)^{1/2}$$

$$\textcircled{\sqrt{3b}}$$

$$a^{1/n} = \sqrt[n]{a}$$

$$22.) (6a)^{\frac{5}{2}}$$
$$\left(\sqrt[2]{6a}\right)^5$$

Remember:

$$a^{\frac{m}{n}} = \left(\sqrt[n]{a}\right)^m$$

$$23.) (6x)^{\frac{3}{2}}$$
$$\left(\sqrt[2]{6x}\right)^3$$

$$24.) \frac{1}{2}x^4 = 648 \cdot 2$$

$$\sqrt[4]{x^4} = \sqrt[4]{1296}$$

$$x = \pm 6$$

$$25.) \begin{array}{r} 5x^3 - 8 = 1707 \\ +8 \quad +8 \\ \hline 5x^3 = 1715 \\ \frac{5x^3}{5} = \frac{1715}{5} \end{array}$$

$$x^3 = 343$$

$$x = 7$$