p. 668 more of 10.2

ex 62 $6^{4/3} \cdot 6^{2/3} = 6^{6/3} = 6^2 = 36$

ex 64 $\dfrac{125^{7/3}}{125^{5/3}} = 125^{2/3} = \left(\sqrt[3]{125}\right)^2 = 5^2 = 25$

ex 66 $r^{-8/9} \cdot r^{17/9} = r^{9/9} = r^1 = r$

$\dfrac{r^{17/9}}{r^{8/9}} = r^{9/9} = r^1 = r$

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ex 68 $x^{2/5} \cdot x^{-1/3} = x^{\frac{6}{15}} \cdot x^{-\frac{5}{15}} = x^{\frac{1}{15}}$

ex 70 $\dfrac{z^{3/4}}{z^{5/4} \cdot z^{-2}} = \dfrac{z^{3/4} \cdot z^{8/4}}{z^{5/4}} = \dfrac{z^{11/4}}{z^{5/4}}$

$= z^{6/4} = z^{3/2}$

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ex 72 $\dfrac{\left(r^{\frac{1}{5}} s^{\frac{2}{3}}\right)^{15}}{r^{2}} = \dfrac{r^{3} s^{10}}{r^{2}} = r^{1} s^{10}$ or $r s^{10}$

ex 74 $\dfrac{\left(p^{3}\right)^{\frac{1}{4}}}{\left(p^{\frac{5}{4}}\right)^{2}} = \dfrac{p^{3/4}}{p^{10/4}} = \dfrac{1}{p^{7/4}}$

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ex 78 $\dfrac{z^{\frac{1}{3}} z^{-\frac{2}{3}} z^{\frac{1}{6}}}{\left(z^{-\frac{1}{6}}\right)^{3}} = \dfrac{z^{\frac{2}{6}} z^{-\frac{4}{6}} z^{\frac{1}{6}}}{z^{-\frac{3}{6}}} = \dfrac{z^{-\frac{1}{6}}}{z^{-3/6}}$

$= \dfrac{z^{3/6}}{z^{1/6}} = z^{\frac{2}{6}} = z^{\frac{1}{3}}$

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ex 82 $\left(\frac{2^{-2}\, w^{-3/4}\, x^{-5/8}}{w^{3/4}\, x^{-1/2}}\right)^{-3} = \frac{2^{6}\, w^{9/4}\, x^{15/8}}{w^{-9/4}\, x^{3/2}}$

$= \frac{64\, w^{18/4}\, x^{15/8}}{x^{12/8}} = 64 w^{9/2} x^{3/8}$

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ex 84 $z^{5/8}\left(3z^{5/8} + 5z^{11/8}\right)$

$= 3z^{10/8} + 5z^{16/8} = 3z^{5/4} + 5z^{2}$

ex 90 $-8y^{11/7}\left(y^{3/7} - y^{-4/7}\right) = -8y^{14/7} + 8y^{7/7}$

$= -8y^{2} + 8y$

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ex 92

$$\sqrt[6]{y^5} \cdot \sqrt[3]{y^2}$$

$$= y^{\frac{5}{6}} \cdot y^{\frac{2}{3}}$$

$$= y^{\frac{5}{6}} \cdot y^{\frac{4}{6}} = y^{\frac{9}{6}} = y^{3/2}$$

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ex 105

$$T(d) = 0.07\, d^{3/2}$$

$$T(16) = 0.07 \cdot 16^{3/2}$$

$$= 0.07\left(\sqrt{16}\right)^3$$

$$= 0.07(4)^3$$

$$= 0.07(64) = 4.5$$

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ex107 $30^\circ F$, 15 mph

T V

$windchill = 35.74 + 0.6215T - 35.75V^{\frac{4}{25}} + 0.4275TV^{\frac{4}{25}}$ .16

$= 35.74 + 0.6215(30) - 35.75(15)^{4/25} + 0.4275(30)(15)^{4/25}$

$= 35.74 + 18.63 - 55.14 + 19.78 \approx 19.01$

$19.0^\circ F$

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10.3

p. 679

ex10 $\sqrt{5} \cdot \sqrt{5} = \sqrt{25} = 5$

ex12 $\sqrt{12} \cdot \sqrt{3} = \sqrt{36} = 6$

ex14 $\sqrt{10} \cdot \sqrt{3} = \sqrt{30}$

ex20 $\sqrt[3]{3} \cdot \sqrt[3]{6} = \sqrt[3]{18}$

ex24 $\sqrt[4]{6} \cdot \sqrt[4]{9} = \sqrt[4]{54}$

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ex 28 $\sqrt[5]{8} \cdot \sqrt[6]{12}$ Can't use product rule

ex 30 $\sqrt{\frac{16}{49}} = \frac{\sqrt{16}}{\sqrt{49}} = \frac{4}{7}$

ex 32 $\sqrt{\frac{13}{49}} = \frac{\sqrt{13}}{\sqrt{49}} = \frac{\sqrt{13}}{7}$

ex 38 $\sqrt[3]{-\frac{216}{125}} = -\frac{6}{5}$

ex 42 $-\sqrt[4]{\frac{625}{y^4}} = -\frac{5}{y}$

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ex 46 $\sqrt{18} =$

$3\sqrt{2}$

18

6 3

3 2

$\sqrt{18}$

$= \sqrt{9}\sqrt{2}$

$= 3\sqrt{2}$

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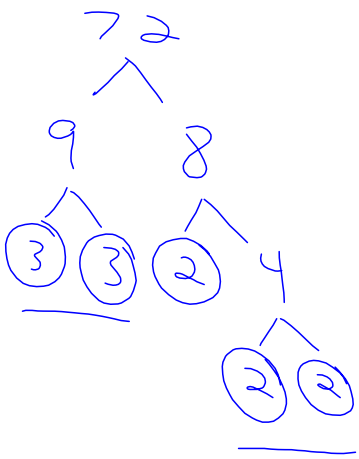
ex48 $\sqrt{72}$

$= 2 \cdot 3 \sqrt{2}$

$= 6\sqrt{2}$



$\sqrt{72}$

$= \sqrt{9}\sqrt{8}$

$= 3\sqrt{8}$

$= 3\sqrt{4}\sqrt{2}$

$= 3 \cdot 2\sqrt{2}$

$= 6\sqrt{2}$

$\sqrt{72}$

$= \sqrt{36}\sqrt{2}$

$= 6\sqrt{2}$

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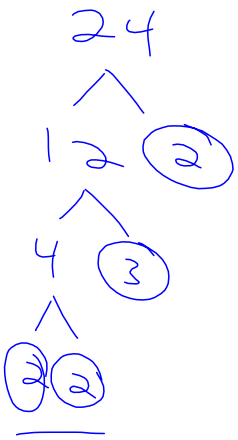
ex52 $-\sqrt{24}$

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

$= -2\sqrt{6}$



$-\sqrt{24}$

$= -\sqrt{4}\sqrt{6}$

$= -2\sqrt{6}$

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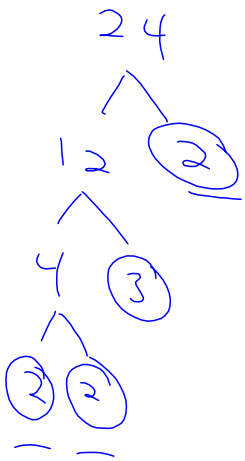
ex 56 $\sqrt[3]{24}$

$2\sqrt[3]{3}$



$\sqrt[3]{24}$

$= \sqrt[3]{8}\ \sqrt[3]{3}$

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

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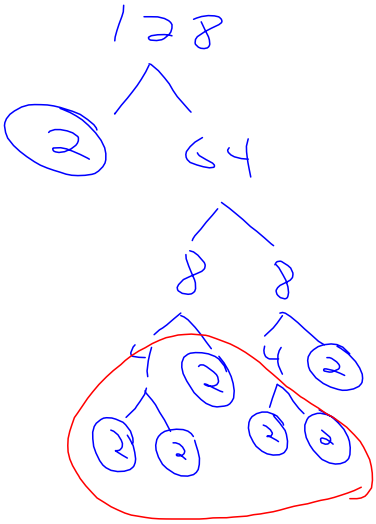
ex 64 $\sqrt[5]{128}$

$= 2\sqrt[5]{4}$



$\sqrt[5]{128}$

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

$2\sqrt[5]{4}$

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ex 70 $\sqrt{18m^2}$

$= \sqrt{9m^2}\sqrt{2}$

$= 3m\sqrt{2}$

then... $\sqrt{18m^3}$

$\sqrt{9m^2}\sqrt{2m}$

$3m\sqrt{2m}$

and then... $\sqrt{18m^4}$

$\sqrt{9m^4}\sqrt{2}$

$3m^2\sqrt{2}$

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ex 74 $\sqrt{256z^{12}} = 16z^6$

ex 76 $-\sqrt[3]{64y^{18}}$

$= -4y^6$

$-\sqrt[3]{64}\sqrt[3]{y^{18}}$

$-4 \quad y^{\frac{18}{3}}$

64

8 8

4 2 4 2

2 2 2 2

$-2 \cdot 2 y^6 = -4y^6$

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ex 80

$$-\sqrt[3]{-216y^{15}x^{6}z^{3}}$$

$$-(-6)y^{5}x^{2}z^{1}$$

$$6y^{5}x^{2}z$$

ex 88

$$\frac{\sqrt{23k^{9}p^{14}}}{\sqrt{k^{8}p^{14}}\ \sqrt{23k}}$$

$$k^{4}p^{7}\sqrt{23k}$$

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ex 92

$$\sqrt[3]{-81m^{4}n^{10}}$$

$$\sqrt[3]{-27m^{3}n^{9}}\ \sqrt[3]{3mn}$$

$$-3mn^{3}\sqrt[3]{3mn}$$

$$\sqrt[4]{81m^{4}n^{10}}$$

$$\sqrt[4]{81m^{4}n^{8}}\ \sqrt[4]{n^{2}}$$

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

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ex 102 $\sqrt[4]{50^2} = 50^{\frac{2}{4}} = 50^{\frac{1}{2}} = \sqrt{50}$

$= \sqrt{25}\sqrt{2}$

$= 5\sqrt{2}$

or

$\sqrt[4]{2500}$

$\sqrt[4]{625}\sqrt[4]{4}$

5

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