

10.5 p. 640

$$10.4 \rightarrow \sqrt{3} + \sqrt{5} + 2\sqrt{3} + 7\sqrt{5} = 3\sqrt{3} + 8\sqrt{5}$$

$$1x + 1y + 2x + 7y = 3x + 8y$$

$$1\sqrt{3} + 3\sqrt{3} + 5\sqrt{3} + 2\sqrt{3} = 6\sqrt{3} + 3\sqrt{3}$$

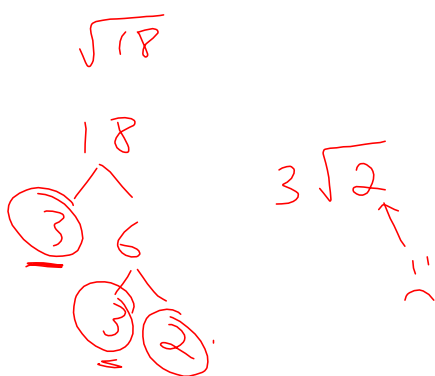
ex 8 $\sqrt{2}(\sqrt{32} - \sqrt{9}) = \sqrt{64} - \sqrt{18}$

$$= 8 - \sqrt{9 \cdot 2}$$

$$= 8 - \sqrt{9} \cdot \sqrt{2}$$

$$= 8 - 3\sqrt{2}$$

stop!



$$\begin{aligned}
 \underline{\text{ex 10}} \quad & 7(\sqrt{50} - \sqrt{18}) \\
 & = 7\sqrt{50} - 7\sqrt{18} \\
 & = 7\sqrt{25 \cdot 2} - 7\sqrt{9 \cdot 2} \\
 & = 7\sqrt{25} \sqrt{2} - 7\sqrt{9} \sqrt{2} \\
 & = 7 \cdot 5 \sqrt{2} - 7 \cdot 3 \sqrt{2} \\
 & = 35\sqrt{2} - 21\sqrt{2} \\
 & = 14\sqrt{2}
 \end{aligned}$$

$$\begin{aligned}
 \underline{\text{ex 12}} \quad & (\sqrt{3} - 5)(\sqrt{3} + 5) \\
 & \text{Conjugates! F&A&L} \\
 & = \sqrt{9} + 5\sqrt{3} - 5\sqrt{3} - 25 \\
 & = 3 \quad \cancel{+5\sqrt{3} - 5\sqrt{3}} - 25 \\
 & = -22
 \end{aligned}$$

ex 14

$$(\sqrt{7} + \sqrt{14})(\sqrt{7} - \sqrt{14})$$

conjugates FOIL

$$= \sqrt{49} - \sqrt{196}$$

$$= 7 - 14$$

$$= -7$$

ex 18

$$(\sqrt{3} + 3)(\sqrt{5} - 2)$$

$$= \sqrt{15} - 2\sqrt{3} + 3\sqrt{5} - 6$$

ex 22 $(\sqrt{7} - \sqrt{11})(2\sqrt{7} + 3\sqrt{11})$

1
4
9
16
25
36
49

$$2\sqrt{49} + 3\sqrt{77} - 2\sqrt{77} - 3\sqrt{121}$$

$$2 \cdot 7 + 3\sqrt{77} - 2\sqrt{77} - 3 \cdot 11$$

$$\underline{14} + \sqrt{77} - \underline{33} \quad 2\sqrt{49} + \sqrt{77} - 3\sqrt{121}$$

$$\underline{-19 + \sqrt{77}} \quad \text{or } \sqrt{77} - 19$$

$$\sqrt{77 - 19}$$

ex 24

$$(\sqrt{11} - 1)^2$$

$$(\sqrt{11} - 1)(\sqrt{11} - 1)$$

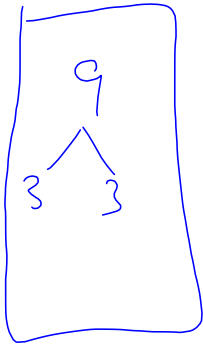
$$\sqrt{121} - \sqrt{11} - \sqrt{11} + 1$$

$$11 - 2\sqrt{11} + 1$$

$$12 - 2\sqrt{11}$$

ex 28

$$(\sqrt[3]{3} + 6)(\sqrt[3]{3} - 6)$$



$$\sqrt[3]{9} - \cancel{6\sqrt[3]{3}} + \cancel{6\sqrt[3]{3}} - 36$$

$$\sqrt[3]{9} - 36$$

or

$$-36 + \sqrt[3]{9}$$

ex 30

- 1
- 8
- 27
- 64
- 125
- ⋮
- 1000

$$(\sqrt[3]{3} - 1)(\sqrt[3]{9} + \sqrt[3]{3} + 1)$$

$$= \sqrt[3]{27} + \cancel{\sqrt[3]{9}} + \cancel{\sqrt[3]{3}} - \cancel{\sqrt[3]{9}} - \cancel{\sqrt[3]{3}} - 1$$

$$= 3$$

$$-1 = 2$$

ex 34

$$(\sqrt{k} + 4\sqrt{m})(\sqrt{k} - 4\sqrt{m})$$

$$= k - 16m$$

ex 42

$$[(\sqrt{5} - \sqrt{2}) - \sqrt{3}][(\sqrt{5} - \sqrt{2}) + \sqrt{3}]$$

$$\textcircled{5} - \sqrt{10} - \sqrt{10} + 2 \quad \textcircled{-3}$$

$$-2\sqrt{10} + 4$$

$$4 - 2\sqrt{10}$$

ex $(2\sqrt{3} + 4\sqrt{5})(5\sqrt{7} + 2\sqrt{2})$

$$10\sqrt{21} + 4\sqrt{6} + 20\sqrt{35} + 8\sqrt{10}$$

ex 44

$$\frac{11}{\sqrt{11}} \cdot \frac{\sqrt{11}}{\sqrt{11}} = \frac{\cancel{11}\sqrt{11}}{\cancel{11}} = \sqrt{11}$$

$$\frac{11}{\sqrt{11}} = \frac{\cancel{\sqrt{11}} \cdot \sqrt{11}}{\cancel{\sqrt{11}}}$$

$$\frac{9}{3} = 3$$

$$\frac{9}{\sqrt{9}} = \sqrt{9} = 3$$

$$\frac{11\sqrt{11} + 2}{11} = \frac{11\sqrt{11}}{11} + \frac{2}{11}$$

$$\sqrt{11} + \frac{2}{11}$$

$$\frac{11\sqrt{11} + 2}{11} = \sqrt{11} + \frac{2}{11}$$

ex 46

$$\frac{12}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{12\sqrt{6}}{6} = 2\sqrt{6}$$

ex 48

$$\frac{\sqrt{7}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{\sqrt{42}}{6}$$

ex 52

$$\frac{-5}{\sqrt{24}} \cdot \frac{\sqrt{24}}{\sqrt{24}} = \frac{-5\sqrt{24}}{24} = \frac{-5\sqrt{4 \cdot 6}}{24}$$

$$= \frac{-5\sqrt{4} \cdot \sqrt{6}}{24} = \frac{-5 \cdot 2\sqrt{6}}{24} = \frac{-10\sqrt{6}}{24}$$

$$\frac{-5}{\sqrt{24}} = \frac{-5}{\sqrt{4 \cdot 6}} = \frac{-5}{2\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} =$$

$$\frac{-5\sqrt{6}}{2 \cdot \sqrt{36}} = \frac{-5\sqrt{6}}{2 \cdot 6} = \frac{-5\sqrt{6}}{12}$$

$$= \frac{-5\sqrt{6}}{12}$$

ex 58

$$\frac{\sqrt{52}}{\sqrt{y}} \cdot \frac{\sqrt{y}}{\sqrt{y}} = \frac{\sqrt{4} \sqrt{13} \sqrt{y}}{y} = \frac{2\sqrt{13y}}{y}$$

ex 62

$$-\sqrt{\frac{98r^3}{s^5}} \cdot \frac{\sqrt{s}}{\sqrt{s}} = -\sqrt{\frac{98r^3s}{s^6}}$$

$$= -\frac{\sqrt{98r^3s}}{\sqrt{s^6}} = -\frac{\sqrt{49r^2} \sqrt{2rs}}{s^3}$$

$$= -\frac{7r\sqrt{2rs}}{s^3}$$

$$-\frac{\sqrt{98r^3}}{\sqrt{s^5}} \cdot \frac{\sqrt{s^5}}{\sqrt{s^5}} = -\frac{\sqrt{98r^3s^5}}{s^5}$$

$$= -\frac{\sqrt{49r^2s^4} \sqrt{2rs}}{s^5} = -\frac{7r\sqrt{2rs}}{s^3}$$

ex 70

$$\frac{\sqrt[3]{\frac{4}{5}}}{\sqrt[3]{5}} = \frac{\sqrt[3]{4}}{\sqrt[3]{5}} \cdot \frac{\sqrt[3]{25}}{\sqrt[3]{25}} = \frac{\sqrt[3]{100}}{\sqrt[3]{125}} = \frac{\sqrt[3]{100}}{5}$$

ex 74

$$\frac{\sqrt[3]{10}}{\sqrt[3]{9}} \cdot \frac{\sqrt[3]{3}}{\sqrt[3]{3}} = \frac{\sqrt[3]{30}}{\sqrt[3]{27}} = \frac{\sqrt[3]{30}}{3}$$