6.2 Pg 424 #1, 2, 3-41 odd, 44, 48, 53, 59, 63

① No because they do not have the same index

② If there are no perfect n^{th} roots

③ $5^{3/2} \cdot 5^{\frac{1}{2}} = 5^{4/2} = \boxed{5^2}$

⑤ $3^{\frac{1}{4}} \cdot 27^{\frac{1}{4}} = \boxed{81^{\frac{1}{4}}}$

⑦ $\frac{80^{\frac{1}{4}}}{5^{\frac{1}{4}}} = 80^{\frac{1}{4}} \cdot 5^{\frac{1}{4}} = \boxed{400^{\frac{1}{4}}}$

⑨ $\frac{11^{2/5}}{11^{4/5}} = \boxed{\frac{1}{11^{2/5}}}$

⑪ $\frac{120^{-2/5} \cdot 120^{2/5}}{7^{-3/4}} = \boxed{7^{3/4}}$

⑬ $\frac{(16^{5/9} \cdot 5^{7/9})^{-3}}{16^{-5/3} \cdot 5^{-7/3}} = \boxed{\frac{1}{16^{5/3} \cdot 5^{7/3}}}$

⑮ $\sqrt{20} \cdot \sqrt{5} = \sqrt{100} = \boxed{10}$

⑰ $\sqrt[4]{8} \cdot \sqrt[4]{8} = \sqrt[4]{64}$

$\sqrt[4]{16}\ \sqrt[4]{4} = \boxed{4\sqrt[4]{4}}$

⑲ $\frac{\sqrt[5]{64}}{\sqrt[5]{2}} \cdot \frac{\sqrt[5]{16}}{\sqrt[5]{16}} = \frac{\sqrt[5]{1024}}{\sqrt[5]{32}} = \frac{4}{2} = \boxed{2}$

㉑ $\frac{\sqrt[4]{36} \cdot \sqrt[4]{9}}{\sqrt[4]{4}} = \frac{\sqrt[4]{324}}{\sqrt[4]{4}} \cdot \frac{\sqrt[4]{4}}{\sqrt[4]{4}}$

$\frac{\sqrt[4]{1296}}{\sqrt[4]{16}} = \frac{6}{2} = \boxed{3}$

㉓ $3\sqrt[4]{32} \cdot (-6\sqrt[4]{5})$

$-18\sqrt[4]{160} = -18\sqrt[4]{16}\sqrt[4]{10}$

$\boxed{-36\sqrt[4]{10}\ C}$

㉕ $\sqrt[6]{256} = \sqrt[6]{64} \cdot \sqrt[6]{4}$

$\boxed{2\sqrt[6]{4}}$

㉗ $5\sqrt[4]{64} \cdot 2\sqrt[4]{8}$

$10\sqrt[4]{512}$

$10\sqrt[4]{256}\ \sqrt[4]{2} = \boxed{40\sqrt[4]{2}}$

㉙ $\frac{3}{\sqrt[4]{144}} \cdot \frac{\sqrt[4]{9}}{\sqrt[4]{9}} = \frac{3\sqrt[4]{9}}{\sqrt[4]{1296}} = \frac{3\sqrt[4]{9}}{6}$

$= \boxed{\frac{\sqrt[4]{9}}{2}}$

(31) $\frac{\sqrt[3]{9}}{\sqrt[5]{27}} \cdot \frac{\sqrt[5]{9}}{\sqrt[5]{9}} = \frac{}{\sqrt[5]{243}} = \boxed{\frac{\sqrt[3]{9}\cdot\sqrt[5]{9}}{3}}$

(33) $\frac{3}{5}\sqrt[3]{5} - \frac{1}{5}\sqrt[3]{5}$

$\boxed{\frac{2}{5}\sqrt[3]{5}}$

(35) $\frac{1}{8}\sqrt[4]{7} + \frac{3}{8}\sqrt[4]{7}$

$\boxed{\frac{1}{2}\sqrt[4]{7}}$

(37) $-6\sqrt[7]{2} + 2\sqrt[7]{256}$

$-6\sqrt[7]{2} + 2\sqrt[7]{128}\sqrt[7]{2}$

$-6\sqrt[7]{2} + 4\sqrt[7]{2}$

$\boxed{-2\sqrt[7]{2}}$

(39) $2\sqrt[4]{1250} - 8\sqrt[4]{32}$

$2\sqrt[4]{625}\sqrt[4]{2} - 8\sqrt[4]{16}\sqrt[4]{2}$

$10\sqrt[4]{2} - 16\sqrt[4]{2}$

$\boxed{-6\sqrt[4]{2}}$

(41) Not like terms!
Keep as $2\sqrt[3]{10} + 6\sqrt[3]{5}$

(44) $(y^4)^{\frac{1}{6}} = y^{\frac{4}{6}} = \boxed{y^{\frac{2}{3}}}$

(48) $\sqrt[3]{\frac{x^{15}}{y^6}} = \frac{\sqrt[3]{x^{15}}}{\sqrt[3]{y^6}} = \boxed{\frac{x^5}{y^2}}$

(53) $\sqrt[4]{12x^2y^6z^{12}}$

$\sqrt[4]{12}\ \sqrt[4]{x^2}\ \sqrt[4]{y^6}\ \sqrt[4]{z^{12}}$

$\sqrt[4]{12}\ \sqrt[4]{x^2}\ y\sqrt[4]{y^2}\ z^3$

$\boxed{yz^3\sqrt[4]{12x^2y^2}}$

(59) $\frac{\sqrt[4]{x^6}}{\sqrt[7]{x^5}} \cdot \frac{\sqrt[7]{x^2}}{\sqrt[7]{x^2}} = \frac{x\sqrt[4]{x^2}\cdot\sqrt[7]{x^2}}{\sqrt[7]{x^7}}$

$\frac{x\sqrt[4]{x^2}\cdot\sqrt[7]{x^2}}{x} = \boxed{\sqrt[4]{x^2}\cdot\sqrt[7]{x^2}}$

(63) $(x^4y)^{\frac{1}{2}} + (xy^{\frac{1}{4}})^2$

$x^2y^{\frac{1}{2}} + x^2y^{\frac{1}{2}}$

$\boxed{2x^2y^{\frac{1}{2}}}$