Write in radical form:

$4w^{\frac{5}{3}}$

$4\sqrt[3]{w^5}$

or

$4\left(\sqrt[3]{w}\right)^5$

Write in exponential form:

$\sqrt{8m^7}$

$(8m^7)^{1/2}$ or $8^{1/2}\,m^{7/2}$

4. Simplify each. Assume all variables are positive. Rationalize denominators.

a) $\sqrt{125} - 6\sqrt{80} + 2\sqrt{45}$

$\sqrt{25\cdot5}$ $\quad\sqrt{16\cdot5}$ $\quad\sqrt{9\cdot5}$

$= 5\sqrt{5} - 6\cdot4\sqrt{5} + 2\cdot3\sqrt{5}$

$= 5\sqrt{5} - 24\sqrt{5} + 6\sqrt{5}$

$= \boxed{-13\sqrt{5}}$

b) $\sqrt[3]{18m^5n} \cdot \sqrt[3]{30m^2n^7} \cdot \sqrt[3]{12mn^8}$

$6\cdot3 \quad 6\cdot5 \quad 6\cdot2$

$= \sqrt[3]{6^3\cdot30m^8n^{16}}$

$= \boxed{6m^2n^5\sqrt[3]{30m^2n}}$

c) $$\frac{\sqrt[3]{27a^{-6}b^{22}c^{2}}}{\sqrt[3]{108a^{13}b^{7}c^{10}}} = \frac{\sqrt[3]{b^{15}}}{\sqrt[3]{\underset{2^2}{4}\,a^{19}c^{8}}} \cdot \frac{\sqrt[3]{2a^2c}}{\sqrt[3]{2a^2c}}$$

$$\frac{\sqrt[3]{2a^2b^{15}c}}{\sqrt[3]{2^3a^{21}c^{9}}}$$

$$= \frac{b^5\sqrt[3]{2a^2c}}{2a^7c^3}$$

Simplify each, use absolute value symbols where necessary.

a) $\sqrt[5]{\underset{32\cdot5}{160}c^8d^{13}}$

because this is an odd radical
NO absolute value symbols are used

$2^5 = 32$

~~$3^5 = 243$~~

$$2cd^2\sqrt[5]{5c^3d^3}$$