Simplify. No exponents should be left as zero or negative.

1. $(256Q^{20})^{\frac{1}{4}}$

$= 256^{1/4}(Q^{20})^{1/4}$

$= \sqrt[4]{256} \cdot Q^{20 \cdot \frac{1}{4}}$

$= \boxed{4Q^5}$

2. $\left(\frac{64a^5b^{-7}}{a^{-7}b^{-1}}\right)^{\frac{1}{3}}$

$= \left(\frac{64a^{12}}{b^6}\right)^{1/3}$

$= \frac{\sqrt[3]{64}\, a^{12 \cdot 1/3}}{b^{6 \cdot 1/3}}$

$= \boxed{\frac{4a^4}{b^2}}$

Simplify. No exponents should be left as zero or negative.

3. $\left(\frac{m^6p^{-3}}{25p}\right)^{-\frac{1}{2}}$

$\left(\frac{m^6}{25p^4}\right)^{-1/2} = \left(\frac{25p^4}{m^6}\right)^{1/2} = \boxed{\frac{5p^2}{m^3}}$

4. $(g^{-\frac{5}{6}}h^{\frac{1}{4}})^{-12}$

$= g^{\left(-\frac{5}{6} \cdot -12\right)} h^{\left(\frac{1}{4} \cdot -12\right)}$

$= g^{10}h^{-3}$

$= \boxed{\frac{g^{10}}{h^3}}$

Simplify.

$\sqrt[5]{7} \cdot \sqrt[5]{3} =$ $\sqrt[5]{7 \cdot 3} = \sqrt[5]{21}$

Since these are the same radical you can write it as a single radical with the product as the radicand.

$\sqrt[3]{Q^2} \cdot \sqrt{Q^5} = Q^{\frac{2}{3}} \cdot Q^{\frac{5}{2}} =$

$= Q^{\frac{2}{3}+\frac{5}{2}}$

$\frac{4}{6} + \frac{15}{6} = Q^{\frac{19}{6}}$ OR $\sqrt[6]{Q^{19}}$

These aren't the same radical. Changing each radical to a rational exponent then using the rules of exponents allows you to change it to one power of Q by adding exponents.

Simplify.

$A^{\frac{3}{4}} \div A^{\frac{1}{6}} = A^{\frac{9}{12} - \frac{2}{12}} = \boxed{A^{\frac{7}{12}} \text{ OR } \sqrt[12]{A^7}}$

Use the rules of exponents to write it as one power of A by subtracting the exponents.

Simplify each. No decimals, give rational answers in reduced form

a. $27^{\frac{2}{3}} =$

$\sqrt[3]{27^2}$ or $\left(\sqrt[3]{27}\right)^2 = (3)^2 = 9$

since 27 is a perfect cube it's easier to do the cube root first then square that result.

b. $6^{\frac{3}{2}} =$

$\sqrt{6^3} \rightarrow \sqrt{6 \cdot 6 \cdot 6} = \sqrt{6^2 \cdot 6} = 6\sqrt{6}$

OR $\left(\sqrt{6}\right)^3$

c. $4^{-\frac{5}{2}} = \frac{1}{4^{\frac{5}{2}}} = \frac{1}{32}$

$\sqrt{4^5}$ or $\left(\sqrt{4}\right)^5$

$(2)^5 = 32$

You can now finish

Hwk #7: Sec 7-4 Due tomorrow

Pages 388-389

Problems 11, 14, 17, 19, 21, 25, 42, 44, 46, 66, 67