Chapter 4 - Summary

Note Title 6/9/2011

① Classify each number as irrational or rational

a) $\sqrt{1.25}$

$= 1.118033989\ldots$

Irrational

b) 1.25

$= 1\frac{25}{100}$

= Rational

c) $1.\overline{25}$

$= 1\frac{25}{99}$

= Rational

② Simplify as radical

a) $\sqrt{24}$

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

$= 2\sqrt{6}$

b) $\sqrt[3]{24}$

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

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

③ Write as entire radical

a) $6\sqrt{2}$

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

$= \sqrt{72}$

b) $3\sqrt[3]{2}$

$\sqrt[3]{27} \times \sqrt[3]{2}$

$= \sqrt[3]{54}$

④ Write as a radical and evaluate.

a) $9^{\frac{3}{2}}$

$= \left(\sqrt{9}\right)^3$

$= 3^3$

$= 27$

b) $\left(\frac{27}{8}\right)^{\frac{2}{3}}$

$= \sqrt[3]{\frac{27}{8}}^{\,2}$

$= \left(\frac{3}{2}\right)^2$

$= \frac{9}{4}$

⑤ Evaluate

a) 2^{-4}

$= \frac{1}{2^4}$

$= \frac{1}{16}$

b) $16^{-1.5} =$

$= 16^{-\frac{3}{2}}$

$= \frac{1}{16^{\frac{3}{2}}}$

$= \frac{1}{\sqrt[2]{16}^3}$

$= \frac{1}{(4)^3}$

$= \frac{1}{64}$

c) $\left(-\frac{8}{27}\right)^{-\frac{2}{3}}$

$= \left(-\frac{27}{8}\right)^{\frac{2}{3}}$

$= \sqrt[3]{-\frac{27}{8}}^2$

$= \left(-\frac{3}{2}\right)^2$

$= \frac{9}{4}$

⑥ Simplify

a) $(4m^2n^3)^{-3}$

$= 4^{-3}(m^2)^{-3}(n^3)^{-3}$

$= \frac{1}{4^3} m^{-6} n^{-9}$

$= \frac{1}{64 m^6 n^9}$

b) $m^{\frac{2}{3}} \times m^{\frac{4}{3}}$

$= m^{\frac{2}{3}+\frac{4}{3}}$

$= m^{\frac{6}{3}}$

$= m^2$