Without a calculator simplify each.

1. $\sqrt{7} \cdot \sqrt{7}$

$(\sqrt{7})^2 = 7$

2. $\sqrt{12} \cdot \sqrt{3}$

$\sqrt{12 \cdot 3} = \sqrt{36}$

$= 6$

3. $\sqrt{6} \cdot \sqrt[3]{6}$

$= 6^{\frac{1}{2}} \cdot 6^{\frac{1}{3}}$

$= 6^{1/2 + 1/3}$

$= 6^{3/6 + 2/6} = 6^{5/6}$ or $\sqrt[6]{6^5}$

Without a calculator simplify each.

1. $25^{\frac{3}{2}}$

$\sqrt{25^3}$ or $(\sqrt{25})^3$

$= (5)^3$

$= 125$

2. $4^{\frac{2}{3}}$

$(\sqrt[3]{4})^2$ or $\sqrt[3]{4^2}$

$= \sqrt[3]{16}$

$= \sqrt[3]{8 \cdot 2}$

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

3. $7^{\frac{3}{2}}$

$\sqrt{7^3}$ or $(\sqrt{7})^3$

$= \sqrt{7^2 \cdot 7}$

$= 7\sqrt{7}$

Write each in simplest form. Answers should contain no exponents that are negative or zero.

1. $\left(w^{\frac{-5}{6}}\right)^2$

$= w^{\frac{-5}{6}\cdot 2}$

$= w^{-5/3}$

$= \frac{1}{w^{5/3}}$ or $\frac{1}{\sqrt[3]{w^5}}$

2. $(-8a^{12})^{\frac{2}{3}}$

$= (-8)^{2/3} \cdot a^{12\cdot 2/3}$

$= (\sqrt[3]{-8})^2 \cdot a^8$

$= (-2)^2 \cdot a^8$

$= 4a^8$

Simplify without using a calculator.

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

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

$= \frac{1}{(\sqrt{4})^5}$

$= \frac{1}{2^5} = \frac{1}{32}$

2. $3^{\frac{1}{2}} \cdot 27^{\frac{1}{2}}$

$= \sqrt{3} \cdot \sqrt{27}$

$= \sqrt{3 \cdot 27}$

$= \sqrt{81}$

$= 9$

3. $9^{1.5} = 9^{3/2} = (\sqrt{9})^3 = 3^3$

$= 27$

Write each in simplest form. Answers should contain no exponents that are negative or zero.

1. $\left(g^{\frac{-7}{6}} h^{\frac{1}{4}}\right)^{-12}$

$= g^{\frac{-7}{6}\cdot -12} h^{\frac{1}{4}\cdot -12}$

$= g^{14} h^{-3}$

$= \frac{g^{14}}{h^3}$

2. $\left(\frac{c^{\frac{-1}{2}}}{d^{\frac{4}{3}}}\right)^6$

$= \frac{c^{-1/2\cdot 6}}{d^{4/3\cdot 6}}$

$= \frac{c^{-3}}{d^8}$

$= \frac{1}{c^3 d^8}$

Write each in simplest form. Answers should contain no exponents that are negative or zero.

1. $a^{\frac{2}{3}} \div a^{\frac{1}{2}}$

$= a^{2/3 - 1/2}$

$= a^{4/6 - 3/6}$

$= a^{1/6}$ or $\sqrt[6]{a}$

2. $b^{\frac{3}{4}} \cdot b^{\frac{2}{3}}$

$= b^{3/4 + 2/3}$

$= b^{9/12 + 8/12}$

$= b^{\frac{17}{12}}$ or $\sqrt[12]{b^{17}}$

You can now finish Hwk #32

Sec 7-4 **due tomorrow**

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Problems 38, 42, 46, 48, 66, 67, 71