King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math (001)-Term (131)
Recitation R.7

Question1: The expression $\frac{4}{\sqrt[3]{6}}-\frac{1}{\sqrt[3]{48}}$ can be written as a single radical as:

A) $\frac{7}{12}\sqrt[3]{36}$ B) $\frac{9}{12}\sqrt[3]{36}$ C) $\frac{1}{2}\sqrt[3]{36}$ D) $-\frac{7}{12}\sqrt[3]{6}$ E) $-\frac{9}{12}\sqrt[3]{6}$

Question2:

If a is any real number which of the following is TRUE

$(a)\sqrt[4]{a^4}=|a|$ $(b)\sqrt[4]{a^2}=\sqrt{a}$

$(c)\sqrt[3]{a^3}=|a|$ $(d)\sqrt[7]{\sqrt[3]{a}}=a^{\frac{3}{7}}$

$(e)\sqrt[3]{a}\sqrt{a}=\sqrt[6]{a}$

Answer:

(a): TRUE

(b): FALSE because $\sqrt[4]{a^2}=\left(\sqrt{\sqrt{a^2}}\right)=\sqrt{|a|}$

(c): FALSE because $\sqrt[3]{a^3}=a$

(d): FALSE because $\sqrt[7]{\sqrt[3]{a}}=\sqrt[21]{a}=a^{\frac{1}{21}}$

(e): FALSE because $\sqrt[3]{a}\sqrt{a}=a^{\frac{1}{3}}a^{\frac{1}{2}}=a^{\frac{5}{6}}=\sqrt[6]{a^5}\neq\sqrt[6]{a}$

$\sqrt[3]{a}\sqrt{a}\neq\sqrt[3]{\sqrt{a}}=\sqrt[6]{a}$

It is false: for example: $\sqrt[3]{64}\sqrt{64}=4(8)=32$ and $\sqrt[6]{64}=2$

Question3: The expression $\frac{1}{\sqrt[3]{54}}-\frac{2}{\sqrt[3]{16}}$ can be written as a single radical as:

A) $-\frac{\sqrt[3]{4}}{3}$ B) $\frac{\sqrt[3]{4}}{3}$ C) $\frac{\sqrt[3]{2}}{4}$ D) $\frac{\sqrt[3]{6}}{3}$ E) $\frac{\sqrt[3]{2}}{3}$

Question4:

let $x=7+3\sqrt{2}$ and $y=7-3\sqrt{2}$ then one of the following is an integer

$(a)x^2$ $(b)y^2$ $(c)\frac{x}{y}$

$(d)\frac{y}{x}$ $(e)x^2+y^2$

Answer: (e): $x^2+y^2=67+42\sqrt{2}+67-42\sqrt{2}=134$ **is an integer**

Question5: Find the value of

(a): $\frac{\sqrt[13]{(-2)^{13}}-\sqrt[10]{(-2)^{10}}}{\sqrt{2}-1}$

(b): $\frac{1}{|2-\sqrt{5}|}+\frac{1}{|2+\sqrt{5}|}=$

(c): $\sqrt{\frac{\sqrt{5}+\sqrt{6}}{\sqrt{6}-\sqrt{5}}}$

(d): $\frac{3}{\sqrt{5}-\sqrt{2}}-\frac{2}{3\sqrt{2}}$

Solution:

(a): $=-4\left(\sqrt{2}+1\right)$

(b): $=2\sqrt{5}$

(c): $=\sqrt{5}+\sqrt{6}$

(d): $=\sqrt{5}+\frac{2\sqrt{2}}{3}$