King Fahd University of Petroleum and Minerals
University Diploma Programs
Math 003 (032)
Quiz # 2

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Name :…….. ID:…… Sec:….

1) Simplify the expression

$$\left(\frac{-27}{8}\right)^{\frac{-2}{3}}\sqrt{\sqrt[3]{64}}+3(-2)^0$$

$$=\left(\left(\frac{-27}{8}\right)^{\frac{1}{3}}\right)^{-2}\cdot\sqrt[6]{64}+3\cdot 1$$

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

$$=\frac{4}{9}\cdot 2+3=\frac{8}{9}+3=\frac{35}{9}$$

2) Simplify the expression $\sqrt[3]{54x^4y^7}+5y\sqrt[3]{16x^4y^4}$ and combine like radicals

$$\sqrt[3]{54x^4y^7}+5y\sqrt[3]{16x^4y^4}=\sqrt[3]{3^3 2x^3 x\left(y^2\right)^3 y}+5y\sqrt[3]{2^3 2x^3 xy^3 y}$$

$$=3xy^2\sqrt[3]{2xy}+10xy^2\sqrt[3]{2xy}=13xy^2\sqrt[3]{2xy}$$

3) Rationalize the numerator of the expression $\dfrac{\sqrt{x-1}-\sqrt{x+1}}{\sqrt{x-1}+\sqrt{x+1}}$ if $x>1$

$$\frac{\sqrt{x-1}-\sqrt{x+1}}{\sqrt{x-1}+\sqrt{x+1}}\cdot\frac{\sqrt{x-1}+\sqrt{x+1}}{\sqrt{x-1}-\sqrt{x+1}}$$

$$=\frac{(x-1)-(x+1)}{\left(\sqrt{x-1}-\sqrt{x+1}\right)^2}=\frac{-2}{2x+2\sqrt{x^2-1}}$$

4) Simplify $\left[\dfrac{(-2y)^0 y^{-2}\left(5y^2\right)^{-3}}{y^{-3}\left(5^{-1}y^5\right)^{-1}}\right]^{\frac{-1}{4}}$ if $y>0$ to simplest form.

$$\left[\frac{(-2y)^0 y^{-2}(5y^2)^{-3}}{y^{-3}(5^{-1}y^5)^{-1}}\right]^{\frac{-1}{4}} = \left[\frac{y^{-2}5^{-3}y^{-6}}{y^{-3}5y^{-5}}\right]^{\frac{-1}{4}}$$

$$= \left[5^{-3-1}y^{-2+(-6)-(-5)-(-5)}\right]^{\frac{-1}{4}} = \left[5^{-4}y^0\right]^{\frac{-1}{4}} = 5$$

$$= \left[5^{-3-1}y^{-2+(-6)-(-5)-(-5)}\right]^{\frac{-1}{4}}$$

5)

(a) Perform the product $(x-2)^3-(x+1)^2$ and put the answer in standard form.

$$(x-2)^3-(x+1)^2 = x^3-3x^2 2-3x2^2-3^3-(x^2+2x+1)$$

$$= x^3-7x^2-14x-10$$

(b) Fill in the following blanks concerning the above expression.

i. The coefficient of x^3 is …1……

ii. The leading coefficient is …1……..

iii. The constant term is ……-10…….