KEY

First Name:_____ Last Name:_____

LO5 – FQ – 4.3 Rational Exponents

Q1: Simplify. Write your answer with ***positive exponents*** only. *(3 marks)*

$\left(x^{\frac{1}{3}}\right)\left(x^{\frac{4}{5}}\right)$

$x^{\frac{1}{3}+\frac{4}{5}}$

$x^{\frac{5}{15}+\frac{12}{15}}$

$\boxed{x^{17/15}}$

$(y^2)^{\frac{2}{3}}$

$y^{(\frac{2}{1})(\frac{2}{3})}$

$\boxed{y^{4/3}}$

$\left(x^{\frac{1}{2}}\right)^{-3} * x^4$

$(x^{-3/2})(x^4)$

$x^{-3/2+4}$

$x^{-3/2+8/2}$

$\boxed{x^{5/2}}$

Q2: The expression $\dfrac{\left(x^{\frac{3}{5}}\right)^2}{x^{-\frac{2}{5}}}$ simplifies to $x^{\frac{a}{b}}$, where ***a*** and ***b*** are ___ and ___.

*(Record your **two digit** answer in the Numerical Response boxes below)*

8	5		

$\dfrac{(x^{3/5})^2}{x^{-2/5}} = \dfrac{x^{6/5}}{x^{-2/5}} = \dfrac{x^{6/5} \cdot x^{2/5}}{1}$

$= \boxed{x^{8/5}}$ ⇨ So $a = 8$, $b = 5$

KEY

Q3: What is the correct way to write $x^{\frac{2}{3}}$ as a radical?

a. $\sqrt[2]{x^3}$
b. $\sqrt[3]{x^2}$
c. $\sqrt[x]{2^3}$
d. $\sqrt[x]{3^2}$

$x^{\frac{2}{3}} = (x^2)^{1/3} = \sqrt[3]{x^2}$

Q4: Simplify and evaluate the expression $\dfrac{5^2 5^{\frac{1}{2}}}{(5^{-2})^{\frac{1}{2}}}$ to the nearest whole number.

*(Record your **three digit** answer in the Numerical Response boxes below)*

2	8	0	

$$\frac{5^2 \cdot 5^{\frac{1}{2}}}{(5^{-2})^{1/2}} = \frac{5^{2+1/2}}{5^{(-2)(1/2)}} = \frac{5^{5/2}}{5^{-1}} = \frac{5^{5/2} \cdot 5^1}{1}$$

$$= 5^{5/2+1} = 5^{7/2} = 5\,[\wedge]\,(\,7\,[\div]\,2\,)$$

$$= 279.5084\ldots$$

$$\approx 280$$

MARKING

Beginning	0.0 – 2.5
Progressing	3.0 – 4.0
Competent	4.5 – 5.5
Exemplary	6.0