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MATH@TD

K ____ T ____ NAME Solutions

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MCR3U – F15

MCR3U - Integer and Rational Exponents Quiz (Formative)

Provide clear solutions to the following 10 questions. Write your answers on separate lined paper (provided).

1. Evaluate. Express your answer in rational (fractional) form. **K/1**
   $(-3)^{-4}$ $= \frac{1}{(-3)^4} = \frac{1}{81}$

2. Evaluate. Express your answer in rational form. **T/1**
   $(9.78^{-1}x^2y^{-6})^0$ $= 1$

3. Simplify. **K/2**
   $m^2n^3\left(m^3n^2\right)^2$ $= m^2n^3\left(m^6n^4\right) = m^8n^7$

4. Write as a single power, then evaluate. **K/2**
   $\sqrt[4]{81^3}$ $= \left((81)^{1/4}\right)^3 = 3^3 = 27$

5. Simplify the expression. Express your answer with positive exponents. **T/2**
   $\frac{m^{-4}n^{-6}}{mn^{-8}}$ $= m^{-5}n^2 = \frac{n^2}{m^5}$

6. Simplify the expression $\left(m^3n^{-2}\right)^{-2}\left(m^6n^{-4}\right)^{\frac{1}{2}}$. $= \left(m^{-6}n^{+4}\right)\left(m^3n^{-2}\right) = m^{-3}n^2 = \frac{n^2}{m^3}$ **T/3**

7. Simplify the expression. Express your answer with positive exponents. **T/4**
   $\left(\frac{\left(x^6\right)^3\left(y^{-8}\right)}{(2x)^4\left(y^3\right)^2}\right)^{\frac{1}{2}} = \left(\frac{x^{18}\cdot y^{-8}}{16x^4y^6}\right)^{\frac{1}{2}} = \left(\frac{x^{14}}{16y^{14}}\right)^{\frac{1}{2}} = \frac{x^7}{4y^7}$

8. Simplify the expression. Express your answer with positive exponents. **K/3**
   $\frac{\sqrt{81z^{16}}}{\sqrt{100z^{-4}}}$ $= \frac{9z^8}{10z^{-2}} = \frac{9z^{10}}{10}$

9. Simplify the expression. Express your answer with positive exponents. **K/4**

$$\left(\frac{\left(a^5b^{-2}\right)^{-1}\left(a^6b^7\right)}{\left(a^{-2}b^{-3}\right)^{-2}}\right)^2 = \left(\frac{(a^{-5}b^2)(a^6b^7)}{a^4b^6}\right)^2 = \left(a^{-3}b^{+3}\right)^2 = \frac{b^6}{a^6}$$

10. Simplify the expression. **K/3**

$$\frac{\sqrt[3]{-j^6k^{24}}}{\sqrt[4]{j^{-8}k^{12}}} = \frac{\left(-j^6k^{24}\right)^{\frac{1}{3}}}{\left(j^{-8}k^{12}\right)^{\frac{1}{4}}} = \frac{-j^2k^8}{j^{-2}k^3} = -j^4k^5$$