Power of a Quotient

2015

Let's Review...

$(x^3)^2 = (x^3)(x^3) = xxx \cdot xxx = \underline{x^6}$

$x^{3(2)} = \underline{x^6}$

$\frac{x^2y^1}{x^4y^2} = \frac{\cancel{x}\cancel{x}\cancel{y}}{\cancel{x}\cancel{x}\cancel{x}\cancel{x}\cancel{y}\cancel{y}} = \frac{1}{x^2y}$

$(2ab^2)^3 = (2ab^2)(2ab^2)(2ab^2) = 2\cdot2\cdot2\cdot aaa\cdot bb\cdot bb\cdot bb = 8a^3b^6$

Now the new stuff...

$\left(\frac{1}{3}\right)^3 = \frac{1}{3}\cdot\frac{1}{3}\cdot\frac{1}{3} = \frac{1}{27}$

$\left(\frac{x^2}{5}\right)^2 = \left(\frac{x^2}{5}\right)\left(\frac{x^2}{5}\right) = \left(\frac{xx}{5}\right)\left(\frac{xx}{5}\right) = \boxed{\frac{x^4}{25}}$

$\left(\frac{2m^4}{7m}\right)^2 = \left(\frac{2m^4}{7m}\right)\left(\frac{2m^4}{7m}\right) = \left(\frac{2\cdot\cancel{m}mmm}{7\cdot\cancel{m}}\right)\left(\frac{2\cdot\cancel{m}mmm}{7\cdot\cancel{m}}\right) = \frac{4m^6}{49}$

$\left(\frac{4g}{2g^3}\right)^3 = \left(\frac{4g}{2g^3}\right)\left(\frac{4g}{2g^3}\right)\left(\frac{4g}{2g^3}\right) = \left(\frac{\cancel{2}\cdot2g}{\cancel{g}\cdot ggg}\right)\left(\frac{\cancel{2}\cdot2g}{\cancel{g}\cdot ggg}\right)\left(\frac{\cancel{2}\cdot2g}{\cancel{g}\cdot ggg}\right) = \frac{8}{g^6}$

$\left[\left(\frac{2}{x}\right)^3\right]^2 = \left(\frac{2}{x}\right)^3\left(\frac{2}{x}\right)^3 = \left(\frac{2}{x}\right)\left(\frac{2}{x}\right)\left(\frac{2}{x}\right)\cdot\left(\frac{2}{x}\right)\left(\frac{2}{x}\right)\left(\frac{2}{x}\right) = \boxed{\frac{64}{x^6}}$