P2 - Integer Exponents

Review problems

1. Order of operations and exponentiating numbers. Evaluate the following:
   (a) \(5^2 - 4^2 + (5 - 4)^2\)  
   (d) \(4 - 5(4^2 - 3^2)^2\)

2. Explain the difference between the following pairs of expressions:
   (a) \(3^2\) and \(2^3\)  
   (b) \((4 + 5)^2\) and \(4^2 + 5^2\)  
   (c) \(4 - 7(2 + 3)\) and \((4 - 7)(2 + 3)\)

Basic knowledge

3. Evaluate each expression:
   (a) \(\frac{2^3 \cdot 3^7}{2^5 \cdot 3^5}\)  
   (b) \(5^7 \cdot \frac{5^2}{5^5}\)

4. Simplify the following. Assume all variables are positive.
   (a) \(\frac{16x^3}{(2x)^4}\)  
   (b) \(\frac{16(x^3y)^{-5}}{2(x^4y)^2}\)

Intermediate/Advanced

1. Simplify the following. Assume all variables are positive.
   (a) \(\frac{(16x^3y^{-5}z^{-2})^3}{(2x^{-3})^{10}(y^2z^3)^{-1}}\)  
   (b) \(\frac{16(16(xy^2)^2)^{-3}}{(8y^{-1}z)^{-5} \cdot (2xz^2)^3}\)