Section 2.5 – Important Questions

1) Why do you add the exponents to simplify $3^2 \times 3^4$, but multiply the exponents to simplify the expression $(3^2)^4$?

$3^2 \times 3^4$ means (3 x 3) x (3 x 3 x 3 x 3); the factor 3 occurs 6 times, and 2 + 4 = 6, so that is why you add the exponents.

$(3^2)^4$ means (3 x 3) x (3 x 3) x (3 x 3) x (3 x 3) ; the factor 3 occurs 8 times, and 2 x 4 = 8, so that is why you multiply the exponents.

2) a) What is the difference between a quotient of powers and a power of a quotient?

A quotient of powers is one power divided by another power such as $10^3 / 10^2$. A power of quotients is a number divided by another number, and raised to the same power, such as $(\frac{4}{10})^3$.

b) What is the difference between a product of powers and a power of a product?

A product of powers is one power multiplied by another power. Ex. $3^2 \times 3^4$

A power of a product in one number multiplied by another number, and this product is raised to a power, such as $(3 \times 4)^2$.

3) In Example 3, is it easier to key the original expressions in a calculator or use the exponent laws to simplify first? Justify your answer.

It may be easier to simplify first and then use a calculator because evaluating with a calculator would require using a lot of buttons.