

MATH 113
ZAKHAROV

Powers

$$b^4 = b \cdot b \cdot b \cdot b$$

N = natural

Z = integer ex: positive, negative, zero

Q = rational ex: fractions

R = real

irrational = never ends ex: π (pie)

$$b^5 = b \cdot b \cdot b \cdot b \cdot b$$

product rule = multiply 2 powers

• add the exponents together and then raise the base number to their solution

$$\text{ex: } b^3 \cdot b^2 = b \cdot b \cdot b \cdot b \cdot b = B^5 = B^{3+2}$$

$$\frac{B^5}{B^3} = \frac{b \cdot b \cdot b \cdot b \cdot b}{b \cdot b \cdot b} = B^2 = B^{5-3}$$

$$\text{reversed} = B^{3-5} = B^{-2}$$

$$B \text{ raised to the negative power} = \frac{1}{b^x} \rightarrow \text{positive power}$$

$$\text{ex: } b^{-3} = \frac{1}{b^3}$$

$$(b^2)^4 = b^2 \cdot b^2 \cdot b^2 \cdot b^2 = b^{2+2+2+2} = B^{4 \cdot 2} = B^8$$

$$(ab)^3 = a^3 \cdot b^3$$

$$(2a)^2 = 4a^2$$

powers raised to zero

$$B^0 = 1$$

rule = anything raised to the zero power is one