

AA PREP—EVALUATING EXPONENTS LECTURE

Exponent Rules For $a \neq 0, b \neq 0$	
Product Rule	$a^x \times a^y = a^{x+y}$
Quotient Rule	$a^x \div a^y = a^{x-y}$
Power Rule	$(a^x)^y = a^{xy}$
Power of a Product Rule	$(ab)^x = a^x b^x$
Power of a Fraction Rule	$\left(\frac{a}{b}\right)^x = \frac{a^x}{b^x}$
Zero Exponent	$a^0 = 1$
Negative Exponent	$a^{-x} = \frac{1}{a^x}$
Fractional Exponent	$a^{\frac{x}{y}} = \sqrt[y]{a^x}$

EX 1: Evaluate each expression without using a calculator.

a) 3^0	b) 3^1	c) 3^2	d) 3^3	e) 3^4
f) $(-3)^0$	g) $(-3)^1$	h) $(-3)^2$	i) $(-3)^3$	j) $(-3)^4$
k) -3^0	l) -3^1	m) -3^2	n) -3^3	o) -3^4

EX 2: Evaluate each expression without using a calculator.

a) 4^{-2}	b) $(-2)^{-5}$	c) -2^{-5}	d) $\left(\frac{1}{2}\right)^{-4}$	e) $\left(-\frac{2}{5}\right)^{-3}$
f) $16^{\frac{1}{2}}$	g) $27^{\frac{1}{3}}$	h) $16^{\frac{1}{4}}$	i) $64^{\frac{2}{3}}$	j) $64^{\frac{3}{2}}$
k) $64^{\frac{8}{6}}$	l) $81^{\frac{6}{8}}$	m) $81^{\frac{3}{2}}$	n) $\left(\frac{1}{125}\right)^{\frac{2}{3}}$	o) $\left(\frac{9}{4}\right)^{\frac{5}{2}}$