

BE-1B MONDAY 3-24-08

* NO
CALCULATORS!

GIVEN: $C(a^x)$ EVALUATE for the following
VALUES OF C, a, x

① $a = 2, C = 1, x = 4$

② $a = 7, C = 3, x = 2$

③ $a = 5, C = 2, x = 3$

① $1(2^4) = 2 \cdot 2 \cdot 2 \cdot 2 = \boxed{16}$

② $3(7^2) = 3 \cdot 49 = \boxed{147}$

③ $2(5^3) = 2 \cdot 125 = \boxed{250}$

↑
base is 5

↘
EXPOONENT is 3

What is 7^0 ? $\Rightarrow 7^0 = 1$

x^0 ? $\Rightarrow x^0 = 1$

Recall the negative exponent rule,

WHAT IS 5^{-2} ? $5^{-2} = \frac{1}{5^2} = \frac{1}{25}$

WHAT IS 2^{-3} ?

$$2^{-3} = \frac{1}{2^3} = \frac{1}{8}$$

WHAT IS $\left(\frac{1}{2}\right)^{-2}$

$$\left(\frac{1}{2}\right)^{-2} = \frac{1}{\left(\frac{1}{2}\right)^2} = \frac{1}{\frac{1^2}{2^2}} = \frac{1}{\frac{1}{4}} = 4$$

WHAT IS THE difference between these two functions?

$$y = x^2$$

$$y = 2^x$$

How could you compare their graphs?

x	$y = x^2$	$y = 2^x$
-2	4	$2^{-2} = \frac{1}{2^2} = \frac{1}{4}$
-1	1	$2^{-1} = \frac{1}{2}$
0	0	$2^0 = 1$
1	1	$2^1 = 2$
2	4	$2^2 = 4$

PARABOLA

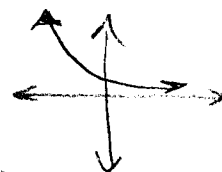
EXPONENTIAL FUNCTION $\Rightarrow$ the variable is an exponent

The Exponential Function:

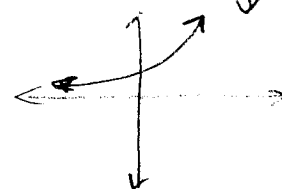
$$y = a^x$$

where a is always positive
($a > 0$) and $a \neq 1$

if $0 < a < 1$



if $a > 1$



Where does $y = a^x$ cross the y axis?

When $x = 0$, $y = a^0 = 1$.

The exponential function crosses the y axis at $(0, 1)$.

Graph: $y = \left(\frac{1}{2}\right)^x$

Ex 2 Pg 555

$y = 4^x$

Ex 1 Pg 555

Homework: • Read Ch 10-5 "Exponential Functions"
• Pg 557 # 1, 2, define asymptote.