BE-1B TUESDAY 3-13-07 (1 DAY ≤ π DAY)

① NAME THIS TYPE OF FUNCTION:

$$y = a^x$$

② NAME THE RESTRICTIONS, if ANY, ON the VALUES for: a ?

for: x ?

③ THIS type of FUNCTION, $y = a^x$ ALWAYS CROSSES THE Y-AXIS AT WHAT VALUE of y?

④ A CURVE THAT APPROACHES A STRAIGHT LINE but NEVER touches it is called AN _____.

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

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

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

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

SEE THE PATTERN ?

MAKE A T-TABLE USING $X = \{-3, -2, -1, 0, 1, 2, 3\}$

AND GRAPH THE TABLE OF X-Y PAIRS FOR

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

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

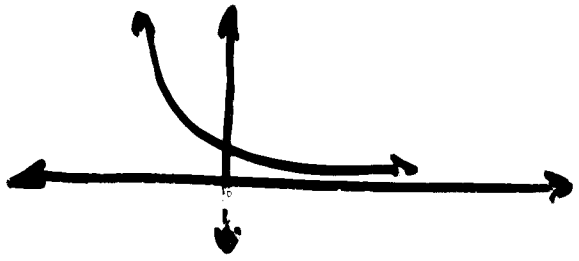
$y = \left(\frac{1}{3}\right)^x$

$y = \left(\frac{1}{4}\right)^x$

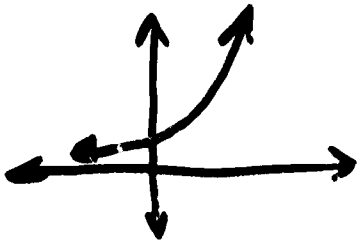
Summary: $\boxed{y = a^x}$ EXPONENTIAL FUNCTION

➡ a MUST BE POSITIVE $(a > 0)$

➡ IF $0 < a < 1$



➡ IF $a > 1$



➡ Y-INTERCEPT $\Rightarrow x = 0$, $a^0 = 1$

Look at Ex. 1 & 2 on Page 555

Homework: Pg. 558 # 3, 4, 5 # 11, 12.
