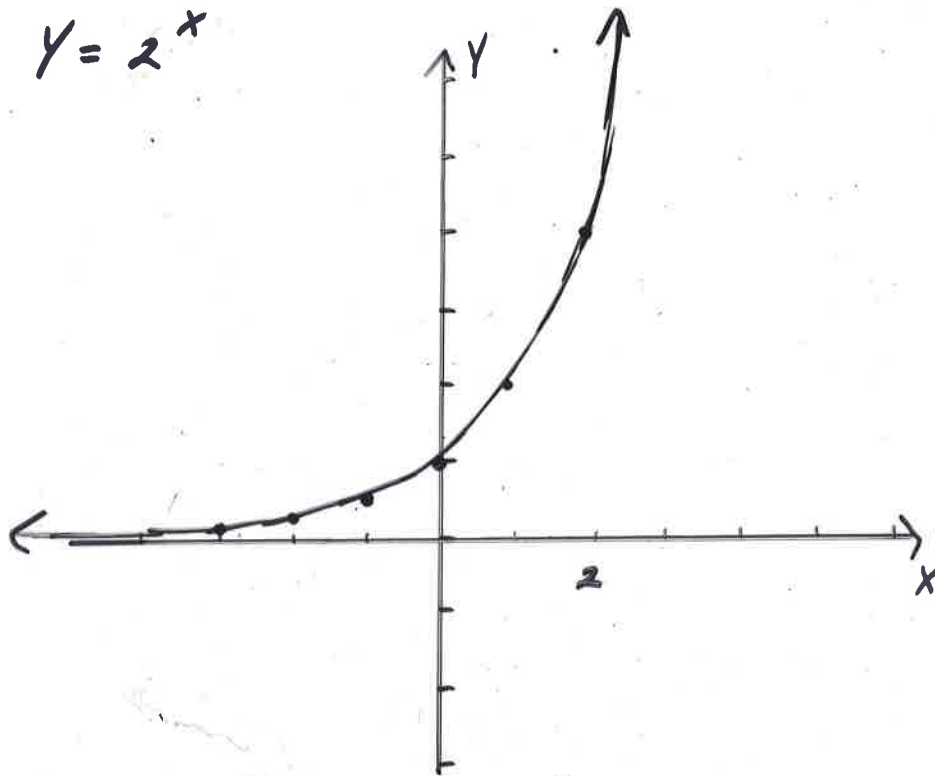


7.1

GRAPHING EXPONENTIAL FUNCTIONS

EX: GRAPH $Y = 2^x$

X	Y
-3	$\frac{1}{8}$
-2	$\frac{1}{4}$
-1	$\frac{1}{2}$
0	1
1	2
2	4
3	8



$$Y = b^x$$

IF $b > 1$

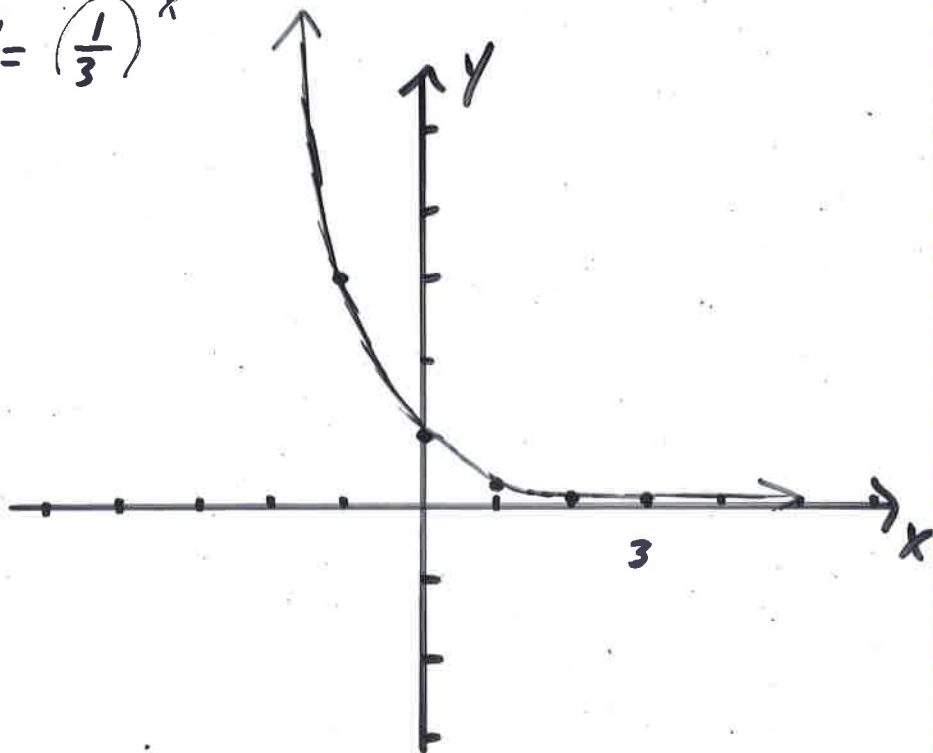
EXPONENTIAL GROWTH

IF $b < 1$

EXPONENTIAL DECAY

EX: GRAPH $Y = \left(\frac{1}{3}\right)^x$

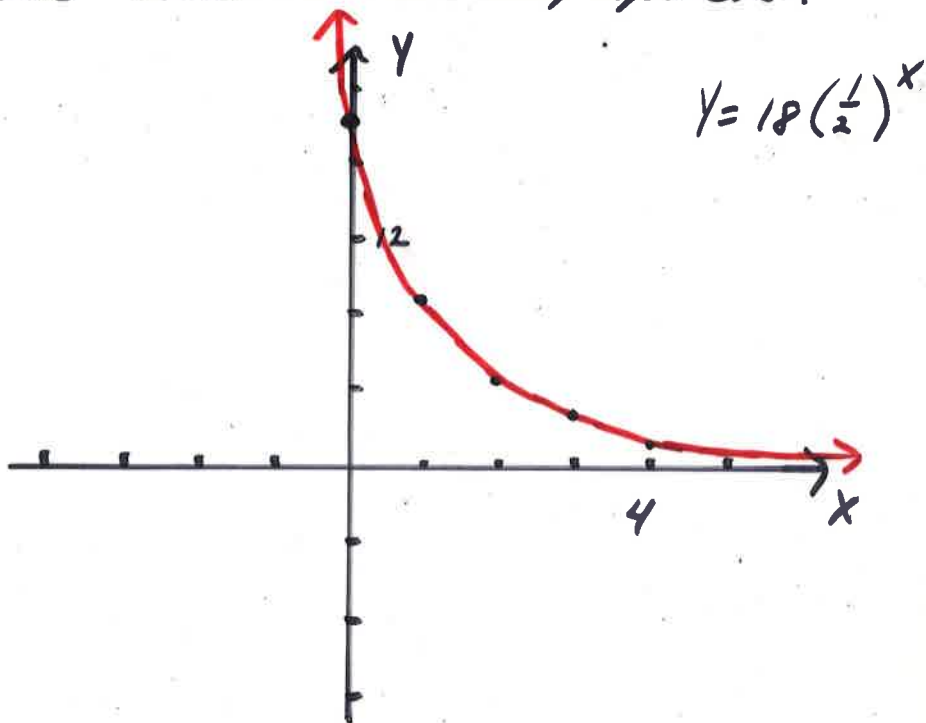
X	Y
-2	9
-1	3
0	1
1	$\frac{1}{3}$
2	$\frac{1}{9}$
3	$\frac{1}{27}$



EX: GRAPH $f(x) = 18(.5)^x$

IDENTIFY THE HORIZONTAL ASYMPTOTE.

X	Y
-2	72
-1	36
0	18
1	9
2	$\frac{18}{2} = 9$
3	$\frac{18}{4} = \frac{9}{2}$
4	$\frac{18}{8} = \frac{9}{4}$



HORIZONTAL ASYMPTOTE AT $y = 0$.
(X-AXIS)

EX: WRITE AN EXPONENTIAL FUNCTION $y = ab^x$
THAT PASSES THROUGH $(0, 24)$ AND $(3, \frac{8}{9})$.

$$y = ab^x$$

$$24 = a \cdot b^0$$

$$24 = a$$

$$y = 24(b^x)$$

$$\frac{1}{24} \cdot \frac{8}{9} = 24(b^3) \cdot \frac{1}{24}$$

$$\frac{1}{27} = b^3$$

$$b = \frac{1}{3}$$

$$y = 24\left(\frac{1}{3}\right)^x$$