

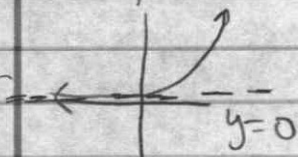
# Properties of Exp Functions

$$y = a \cdot b^x$$

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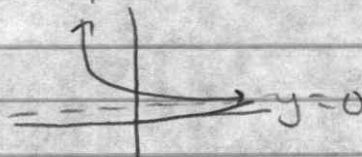
- Domain  $\rightarrow x, \mathbb{R}$ , all real #'s,  $(-\infty, \infty)$ , or  $-\infty < x < \infty$
- horizontal asymptote  $\rightarrow$  line graph approaches but never actually touches  $y = 0$  (when not shift up or down)
- y-intercept  $\rightarrow$  where the graph crosses the y-axis  $(0, a)$   
 $y = a \cdot b^0 \rightarrow y = a \cdot 1 \rightarrow y = a$
- range  $\rightarrow$  differs (4 scenarios)

$a > 0, b > 1$



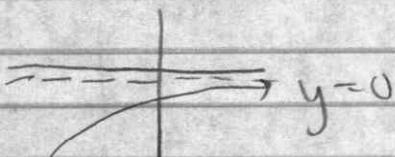
range:  $y > 0$  or  $(0, \infty)$

$a > 0, 0 < b < 1$



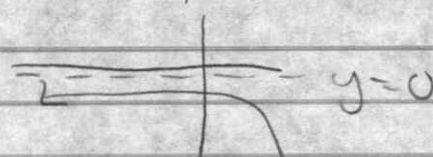
range:  $y > 0$ , or  $(0, \infty)$

$a < 0, 0 < b < 1$



range  $y < 0$  or  $(-\infty, 0)$

$a < 0, b > 1$



range  $y < 0$  or  $(-\infty, 0)$

Increasing

decreasing