$$2xyzrg \cdot 2przg$$

$2 \cdot 2 = 4$

$x^4 \cdot y^{-3}$

$x^6 \cdot \dfrac{1}{y^3}$
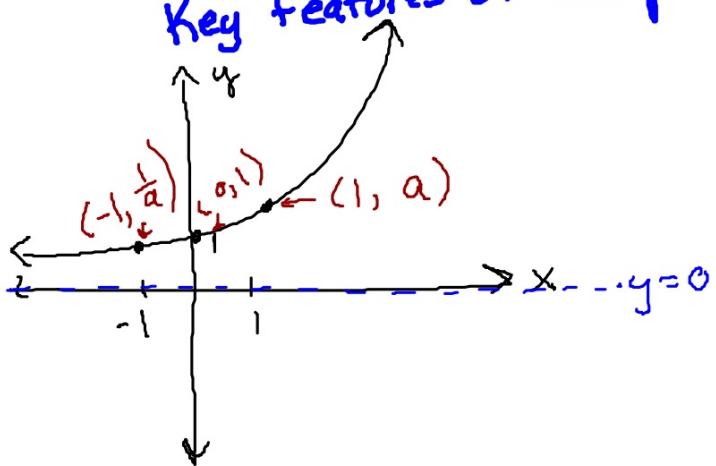
$\dfrac{x^6}{y^3}$

$$\left(\frac{2x^2}{}\right)^4 \neq 2x^8$$

$2^4 x^8 = 16x^8$

Graphs of Exponents

Key features of the parent graph of $\boxed{y = a^x}$

Domain: $\mathbb{R}$ or $(-\infty, \infty)$

Range: $\mathbb{R}^+$ or $(0, \infty)$
$$\{y \mid 0 < y < \infty\}$$

horizontal asymptote $y = 0$

Increasing fuction

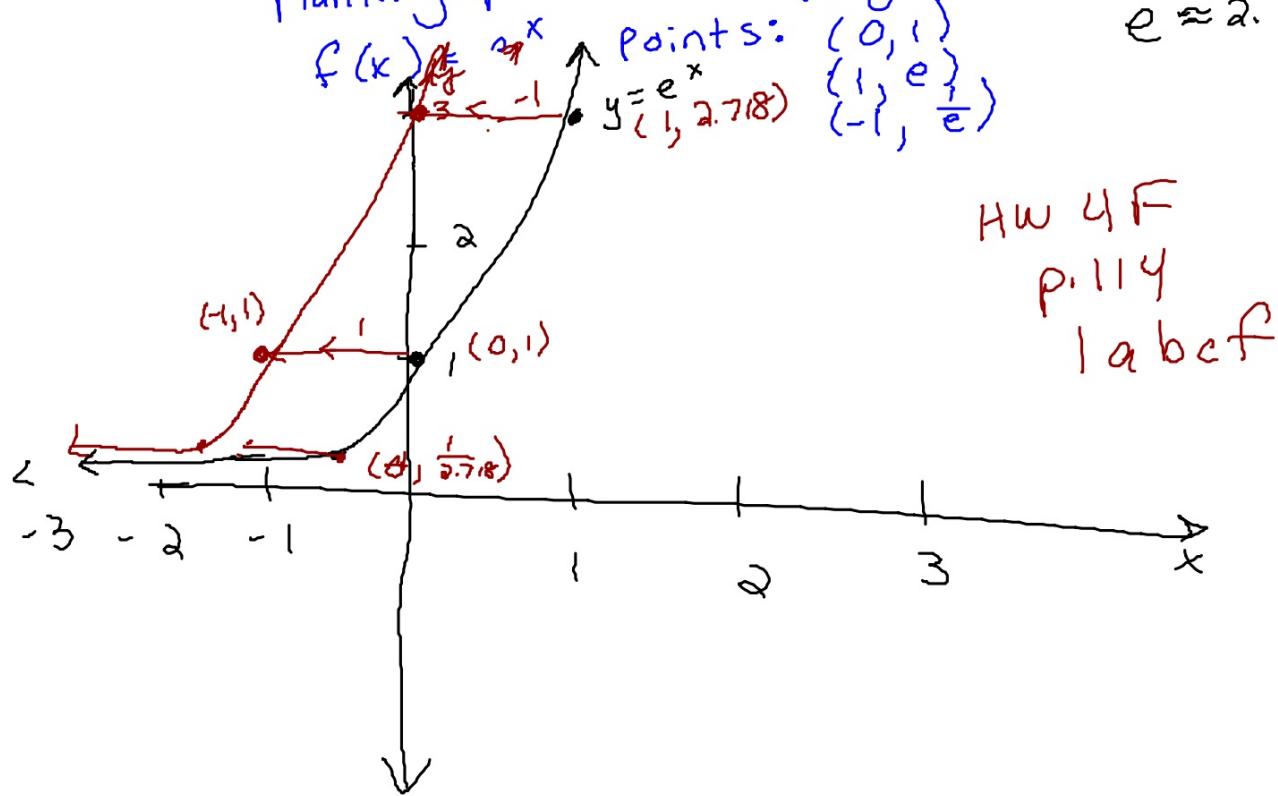y-int: $(0, 1)$

points: $(0, 1)$
$(1, a)$
$(-1, \frac{1}{a})$

Transformations of $f(x) = a^x$

$+\uparrow -\downarrow$ $f(x) \pm K$ is   a vertical trans. by $\pm K$ units

$\xrightarrow{\pm}$ $f(x \pm K)$ is   a horizontal trans. by $\pm K$ units

$-f(x)$ reflects vertically over the x-axis

$f(-x)$ reflects horizontally over the y-axis

$p \, f(x)$ is vertical stretch by factor of p

$f(qx)$ is horizontal stretch/compress by factor of $\frac{1}{q}$

Ex] Graph $g(x) = e^{x+1}$

Plan... graph e^x, then apply transformations

$f(x) = e^x$ Points: $(0, 1)$

$e \approx 2.718$

$y = e^x$ $(1, 2.718)$ $\{1, e\}$ $(-1, \frac{1}{e})$

HW 4F
p.114
1 a b c f

$(-1, 1)$

$(0, 1)$

$(0, \frac{1}{2.718})$

-3 -2 -1   1   2   3   x