

# Review for Quiz

4-4-14 Pg 1  
Precal - Palmer  
2311

○  $f(x) = 7x + 5$

$f^{-1}(x) = ?$

$y = 7x + 5$

$x = 7y + 5$

$x - 5 = 7y$

$\frac{x-5}{7} = y$

$f^{-1}(x) = \boxed{\frac{x-5}{7}}$

$f(f^{-1}(-2)) = ?$

$f^{-1}(-2) = \frac{(-2)-5}{7} = \frac{-7}{7} = \boxed{-1}$

$f(-1) = 7(-1) + 5 = -7 + 5 = \boxed{-2}$

Simplify

$\sqrt[3]{16x^7y^2z^4}$

$\sqrt[3]{\underbrace{2 \cdot 2 \cdot 2}_2 \cdot \underbrace{2}_{2^2} \cdot \underbrace{x \cdot x \cdot x}_{x^3} \cdot \underbrace{x \cdot x \cdot x \cdot x}_{x^4} \cdot \underbrace{z \cdot z \cdot z \cdot z}_{z^4} \cdot y \cdot y}$

$2x^2z \sqrt[3]{2xy^2z}$

$f(x) = \frac{x+2}{x-3}$

Domain?

$\boxed{(-\infty, 3) \cup (3, \infty)}$

Range?

$\boxed{(-\infty, 1) \cup (1, \infty)}$

$f^{-1}(x) = ?$

$x = \frac{y+2}{y-3}$

$x(y-3) = y+2$

$xy - 3x = y + 2$

$xy - y = 3x + 2$

$y(x-1) = 3x + 2$

$y = \frac{3x+2}{x-1}$

Domain:

$\boxed{(-\infty, 1) \cup (1, \infty)}$

Range?

$\boxed{(-\infty, 3) \cup (3, \infty)}$

# Exponential function

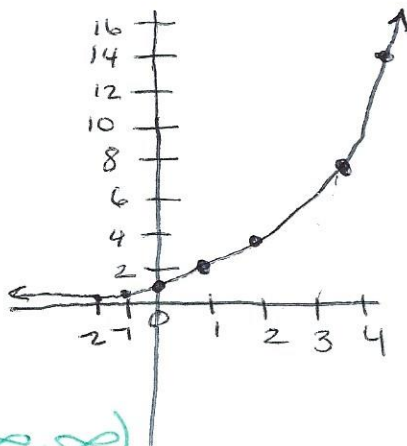
2311 Precalc - Palmer  
Tue 4-9-19 Pg 1

Parent function:  $F(x) = b^x$ , where  $b > 0, b \neq 1$ ,  $x$  is any real # variable

ex  $F(x) = 2^x$

x	y
-2	$2^{-2} = \frac{1}{2^2} = \frac{1}{4}$
-1	$2^{-1} = \frac{1}{2} = \frac{1}{2}$
0	$2^0 = 1$
1	$2^1 = 2$
2	$2^2 = 4$
3	$2^3 = 8$
4	$2^4 = 16$

Growing really fast



Domain:  $(-\infty, \infty)$

Range:  $(0, \infty)$

\* All Exponential function will have an asymptote

\* the Parent function has a H.A.  $y=0$

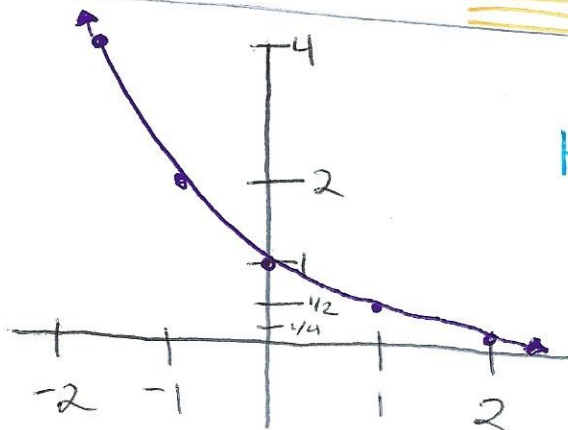
\* the bigger the "b" gets the faster it grows.

\*  $b > 1$  exponential growth

ex  $0 < b < 1$

$F(x) = (\frac{1}{2})^x$

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



HA:  $y=0$

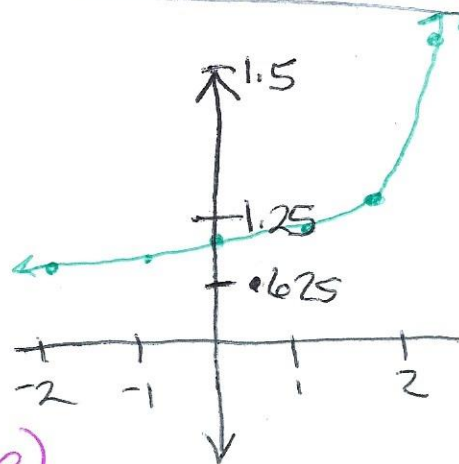
D:  $(-\infty, \infty)$

Range:  $(0, \infty)$

\*  $0 < b < 1$  exponential decay

ex given  $g(x) = 3^{x-2} + 1$

x	y
-2	$3^{-2-2} + 1 = 3^{-4} + 1 = \frac{1}{3^4} + 1 = \frac{1}{81} + 1 = 1.012 = \frac{82}{81}$
-1	$3^{-1-2} + 1 = 3^{-3} + 1 = \frac{1}{3^3} + 1 = \frac{1}{27} + 1 = 1.037 = \frac{28}{27}$
0	$3^{0-2} + 1 = 3^{-2} + 1 = \frac{1}{3^2} + 1 = \frac{1}{9} + 1 = 1.111 = \frac{10}{9}$
1	$3^{1-2} + 1 = 3^{-1} + 1 = \frac{1}{3} + 1 = 1.333 = \frac{4}{3}$
2	$3^{2-2} + 1 = 3^0 + 1 = 2$



D:  $(-\infty, \infty)$

R:  $(1, \infty)$

HA:  $y=1$

\* your vertical transformation will tell you the H.A.

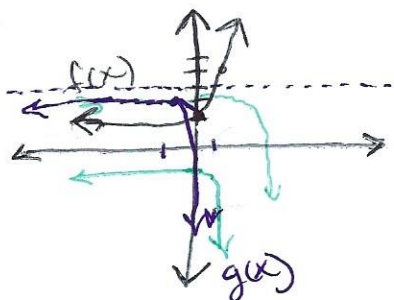
ex

$$g(x) = -4^{x+1} + 3$$

Parent function

$$f(x) = 4^x$$

Tue 4-9-19 Pg 2



Vertical Transformations

- reflect over x

+3 up 3

Horizontal Transformations

x+1 left 1

HA  $y=3$

Calculate

y-int

$$-4^{0+1} + 3 = -4^1 + 3 = -4 + 3 = -1$$

$(0, -1)$

Domain:  $(-\infty, \infty)$

Range  $(-\infty, 3)$