$$\frac{x^3-7x+6}{x^2-5x+4}$$

$$\begin{array}{r|rrrr} -3 & 1 & 0 & -7 & 6 \\ & & -3 & 9 & -6 \\ \hline & 1 & -3 & 2 & \end{array}$$

$$\frac{(x-1)(x-2)(x+3)}{(x-1)(x-4)}$$

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

hole @ $(1, \frac{4}{3})$

$$\frac{(1-2)(1+3)}{(1-4)} = \frac{(-1)(4)}{-3} = \frac{4}{3}$$

$D=\mathbb{R}\setminus\{1,4\}$

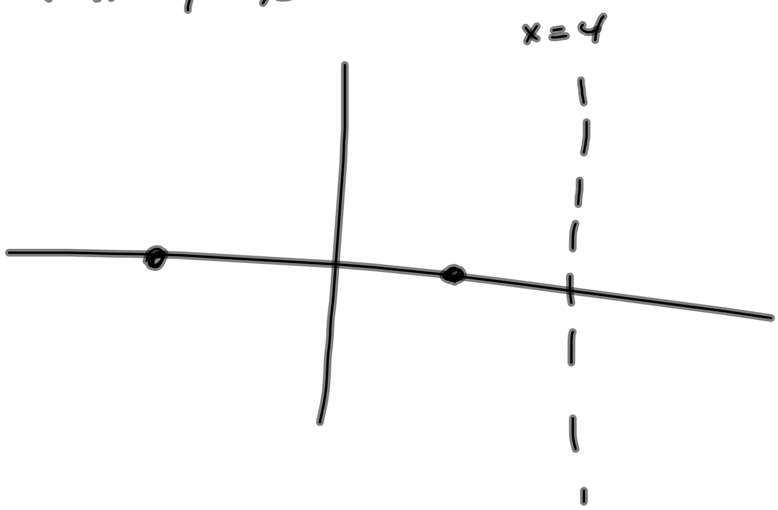
V.A: $x=4$

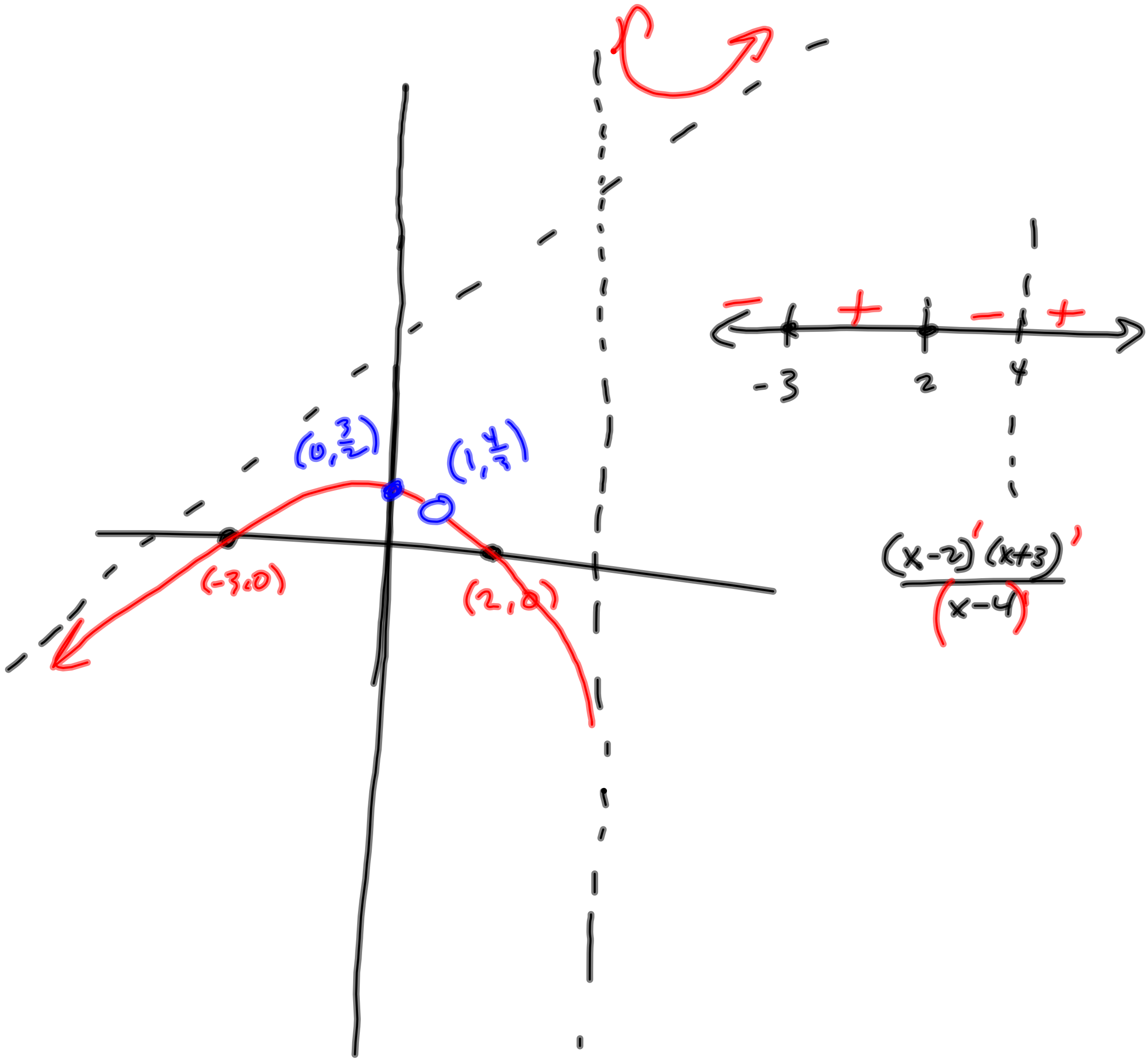
$x-4 \,\overline{)\, x^2+x-6}$

$$\begin{array}{r|rrr} 4 & 1 & 1 & -6 \\ & & 4 & 20 \\ \hline & 1 & 5 & 14 \end{array}$$

$y=x+5$ O.A.

x-int: $(-3,0)$, $(2,0)$




(0, 3/2)
(1, 4/3)
(-3,0)
(2,0)
- + - +
-3 2 4
(x-2)(x+3)
(x-4)

§4.1 Exponential Functions

(D) An exponential function with base a is a function of the form

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

where $a, x \in \mathbb{R}$, $a > 0$, $a \neq 1$

$f(x) = 3^x$

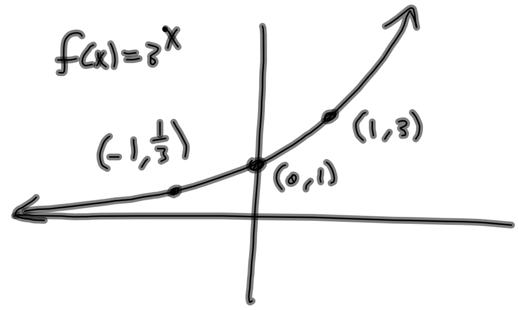
$f(2) = 3^2 = 9$

$f(-2) = 3^{-2} = \frac{1}{3^2} = \frac{1}{9}$

$f(-1) = 3^{-1} = \frac{1}{3}$

$f(1) = 3^1 = 3$

$f(0) = 3^0 = 1$



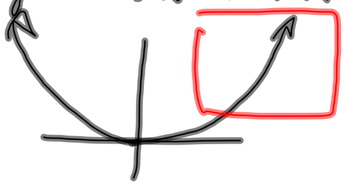
$\mathcal{D} = \mathbb{R}$

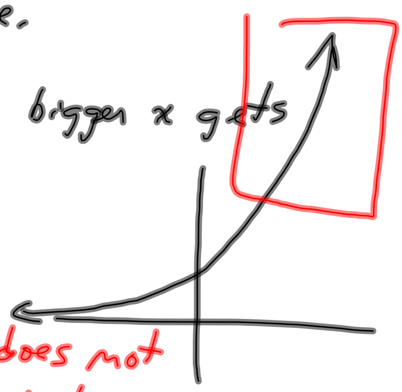
3^x is real if x is real.

3^{100}

Exponential Growth:
Growth rate is proportional to population size.

Now, x^2 grows faster the bigger x gets

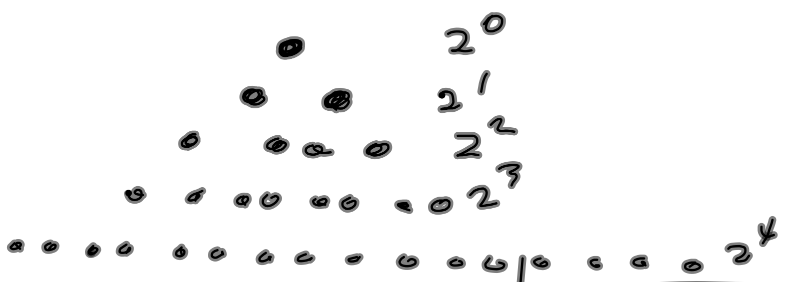




But polynomial growth does not have this proportionality between size and growth rate.

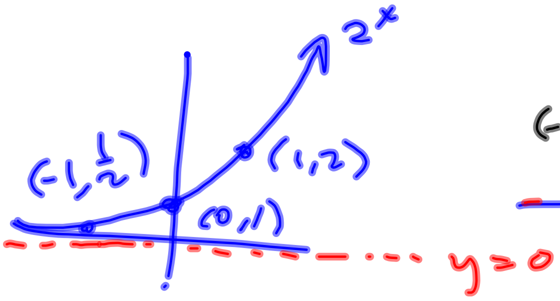
Examples Pop., $, aggravation,

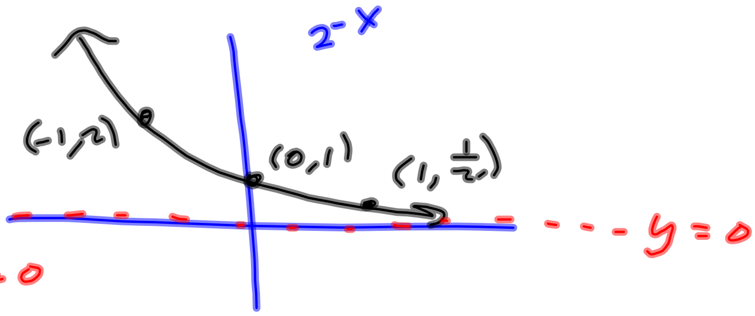
2^x



Exponential Decay Pop., Radioactive Isotopes

$f(x) = 2^{-x}$





$f(x) = 4^x$ $\qquad g(x) = -2 \cdot 4^{1-x} - 7$

$1 - x = -x + 1$

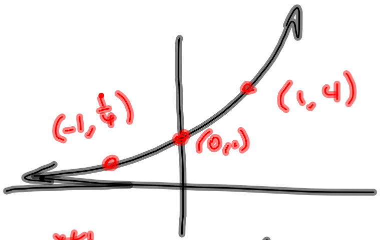
$x+1, \; -x+1$

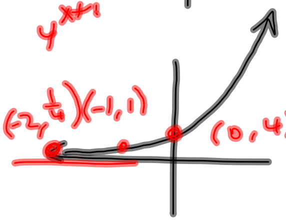
$4^x \longrightarrow 4^{x+1} \longrightarrow 4^{-x+1}$

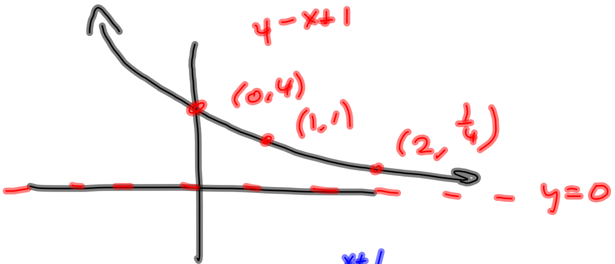
$\longrightarrow -2 \cdot 4^{-x+1}$

$\longrightarrow -2 \cdot 4^{-x+1} - 7$

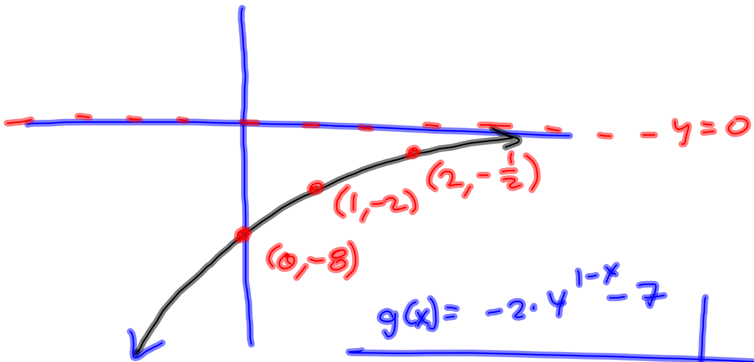
1. Hor Shift
2. Hor Stretch/ref.
3. Vert. stretch/ref.
4. Vert. shift.







$-2 \cdot 4^{-x+1}$

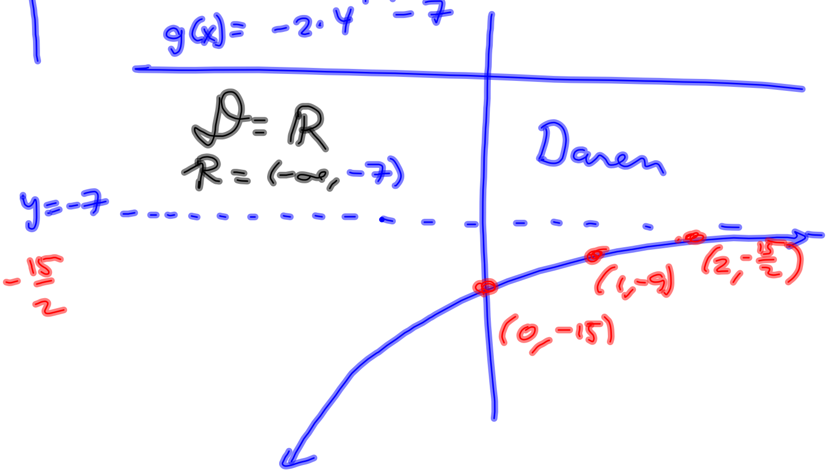


$g(x) = -2 \cdot 4^{1-x} - 7$

$D = \mathbb{R}$

$R = (-\infty, -7)$

Daren



$-\frac{1}{2} - \frac{14}{2} = -\frac{15}{2}$

Compound Interest.

$$A = P\left(1+\frac{r}{m}\right)^{mt}$$

$n = mt$, $i = \frac{r}{m}$ } $A = P(1+i)^n$

r = APR

m = periods/yr

t = # of years

P = Principal

A = Future value (accumulation)

i = interest rate/period.

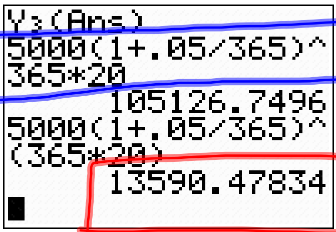
n = total # of periods.

Future value of \$5,000 compounded daily for 20 years @ 5%

$$A = P\left(1+\frac{r}{m}\right)^{mt}$$

$$= 5000\left(1+\frac{.05}{365}\right)^{365\cdot 20}$$

Oct 23-8:34 AM



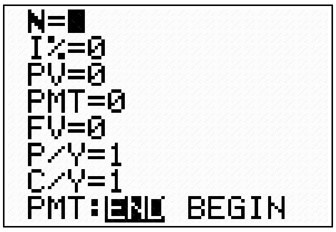
Need parens around 365*20, since what this does is

$$\left(5000\left(1+\frac{.05}{365}\right)^{365}\right)(20)$$

hierarchy of operations

Correct.

Kristen wants to use an app!
It does work, but I suck @ apps.



TI 30 XS

You want a calculator that displays entire expressions and has an edit feature.

$5000\left(1+\frac{.05}{365}\right)^{365\cdot 20}$

```
(365*20)
       13590.47834
5000(1+.05/360)^
(360*20)
       13590.46542
500e^(.05*20)
       1359.140914
```

} Continuous Compounding

missed a zero.

The number e: $e = \lim_{K\to\infty}\left(1+\frac{1}{K}\right)^K$

limit, as $K \to \infty$ of ...

$P\left(1+\frac{r}{m}\right)^{mt}$

$= P\left(1+\frac{1}{(m/r)}\right)^{(m/r)rt} \xrightarrow{\frac{m}{r}\to\infty} Pe^{rt}$

Oct 23-8:53 AM

#5 1-8 ALL, 9, 15, 19,
23, 25, 29, 33, 37,
39, 43, 47, 53, 57,
59, 61, 65, 71, 75,
103, 105

Oct 23-9:01 AM