Precalculus **Chapter 3 Test Review** **Name:**

Calculator

Evaluate the function at the indicated value of x.

$f(x) = 0.3^x$ for $x = 1.1$

≈ 0.266

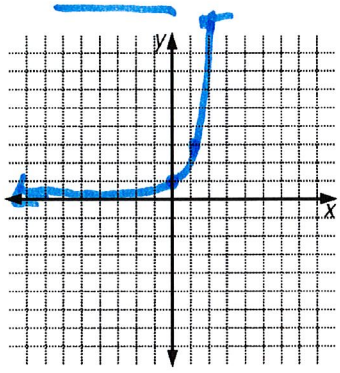
$f(x) = (2.342)^{\frac{x}{3}}$ for $x = \sqrt{5}$

≈ 1.886

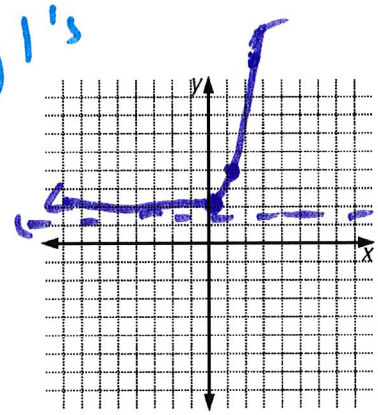
Use the graph of f to describe the transformation that yields the graph of g.

$f(x) = 3^x$; $g(x) = 3^x + 1$

No Calculator



scale by 1's up 1



y = 1 HA

Use the one-to-one property to solve for x.

No Calculator

$2^{2x+4} = \frac{1}{64}$

$x = -5$

$e^{8-4x} = e^{-4}$

$x = 3$

$\log_3(2x-1) = \log_3 8$

$x = 9/2$

$\ln(x^2 - 3x) = \ln 10$

$x = 5 \quad x = -2$

Write the exponential equation in logarithmic form.

$5^3 = 125$

$\log_5 125 = 3$

$7^2 = 49$

$\log_7 49 = 2$

Write the logarithmic equation in exponential form.

$\log_{16} 64 = \frac{3}{2}$

$16^{3/2} = 64$

$\log_{25} 5 = \frac{1}{2}$.

$25^{1/2} = 5$

Precalculus Chapter 3 Test Review **Name:** Key

No Calc

Find the domain

$\log(x+3) + 4.5$

$x > -3$ or $(-3, +\infty)$

Evaluate the logarithm using change-of-base

Calculator

$\log_9 84$

$\frac{\log 84}{\log 9} \approx 2.017$

$\log_7 23$

$\frac{\log 23}{\log 7} \approx 1.611$

No Calc

Use the properties of logarithms to *expand*

$\log 3x^2$

$\log 3 + 2\log x$

$\ln\left(\frac{y-1}{3x}\right)^2$

$2\ln(y-1) - \ln 9 - 2\ln x$

Use the properties of logarithms to *condense*

$\ln(x+3) - (2\ln y + \ln(x-3))$

$\ln\left(\frac{x+3}{y^2(x-3)}\right)$

$2\log(x+3) + \log 4 - 2\log(y-1)$

$\log\left(\frac{4(x+3)^2}{(y-1)^2}\right)$

Calculator

Solve

$4^x = \frac{1}{185}$

$x \approx -3.776$

$\log_7 x = 4$

$x = 2401$

$e^{4x} = 32.$

$x \approx 0.866$

$2\log_4 x + \log_4 7 = 6$

$x^2 = \frac{4096}{7}$

$x = \pm\sqrt{\frac{4096}{7}}$

$\boxed{x \approx 24.190}$

$\cancel{x \approx -24.190}$

~~**You deposit $8500 in an account that pays 5.1% interest, compounded continuously. How long will it take for the money to double?**~~

~~$A = Pe^{rt}$~~

Precalculus **Chapter 3 Test Review** **Name:** Key

No Calc

Use the parent function to graph the function
Be sure to label at least two points and any asymptotes.

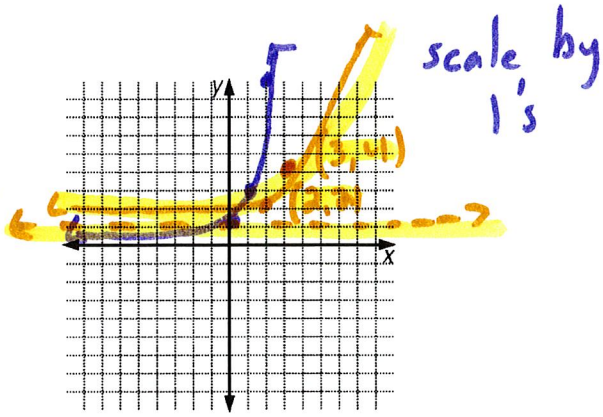
$f(x) = 3^{x-2} + 1.$

parent $f(x) = 3^x$

shift right 2

up 1

H.A. $y = 1$



No Calc

Use the parent function to graph the function
Be sure to label at least two points and any asymptotes

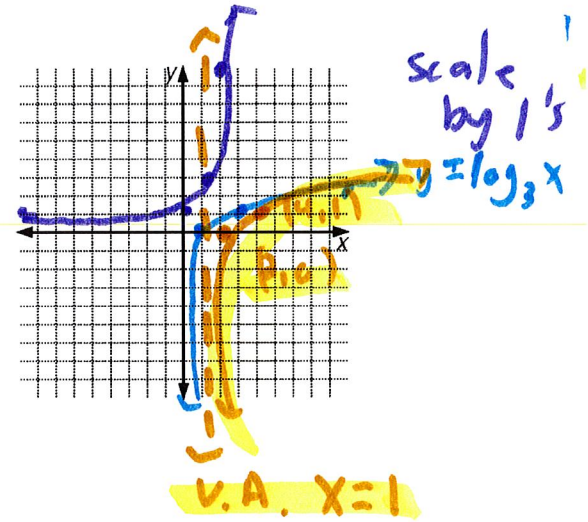
$f(x) = \log_3(x-1)$

Parent $y = \log_3 x$

$3^y = x$

Inverse: $y = 3^x$

shift right 1



Let Q represent a mass of radioactive iodine (in grams), whose half-life is 241 years.

The quantity of iodine present after t years is: $Q = 85\left(\frac{1}{2}\right)^{t/h}$.

(a) Determine the initial quantity (when $t = 0$).

(b) Determine the quantity present after 456 years.