

Chapter 3 test review

$2^x - 3 = 0$
 $\log 2^x = \log 3$
 $x \frac{\log 2}{\log 2} = \frac{\log 3}{\log 2} \Rightarrow x = \frac{\log 3}{\log 2}$

1.) Sketch the graph of $y = 2^x - 3$

$y = 0$
 x-intercepts (1.585, 0)

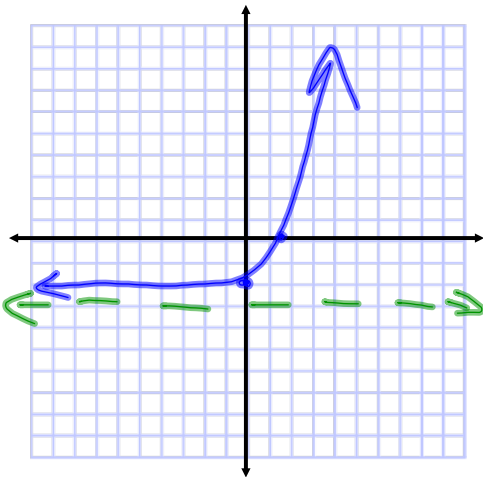
$x = 0$
 $y = 2^0 - 3 = 1 - 3 = -2$
 y-intercepts (0, -2)

Horizontal asymptotes $y = -3$

Vertical asymptotes none

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

y Range $(-3, \infty)$



Chapter 3 test review

1.) Sketch the graph of $y = 2^x - 3$

x-intercepts _____

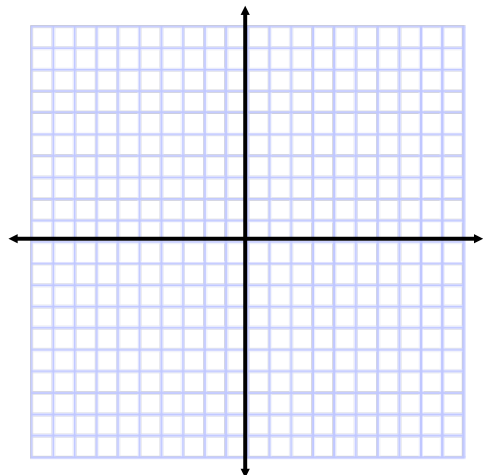
y-intercepts _____

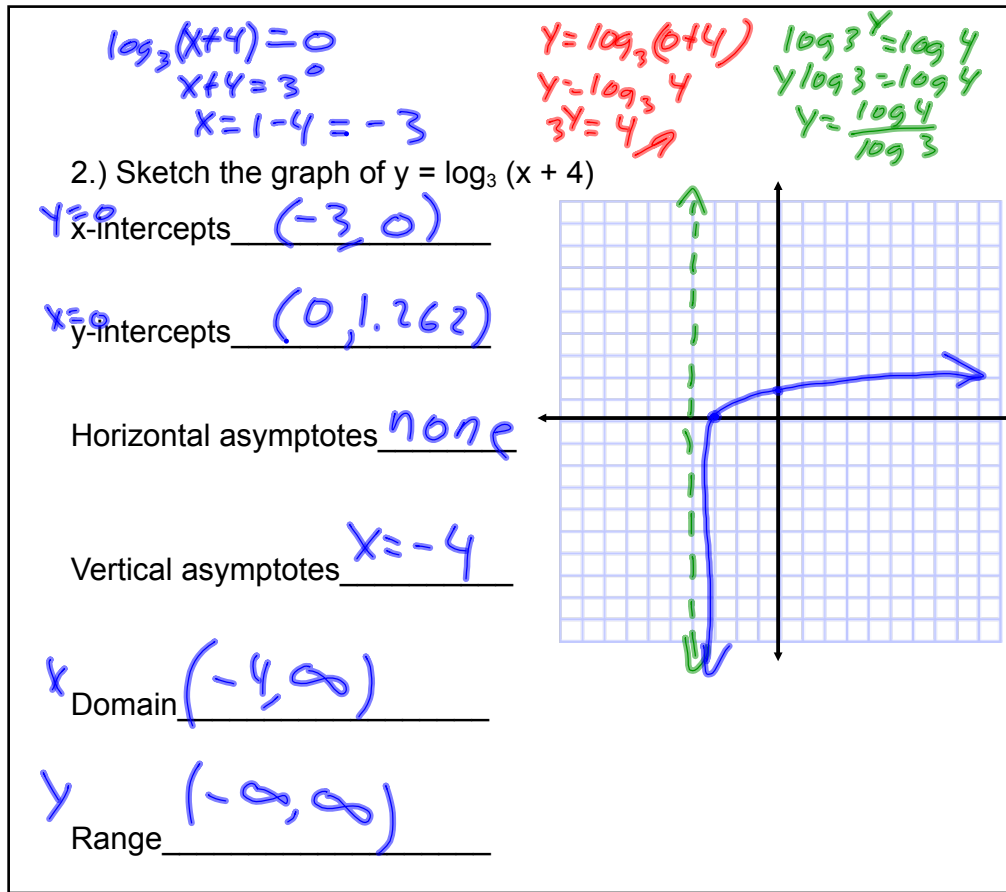
Horizontal asymptotes _____

Vertical asymptotes _____

Domain _____

Range _____





3.) The half life of carbon 12 is 5000 years. Find the age rounded to the nearest year of a sample in which 40% of the original amount has decayed.

$$\frac{1}{2}k = k e^{5000k}$$

$$\ln \frac{1}{2} = \ln e^{5000k}$$

$$\frac{\ln \frac{1}{2}}{5000} = \frac{5000k}{5000}$$

$$k \approx -0.0001386$$

$$y = a e^{-0.0001386t}$$

$$0.6k = k e^{-0.0001386t}$$

$$\ln 0.6 = \ln e^{-0.0001386t}$$

$$\frac{\ln 0.6}{-0.0001386} = \frac{-0.0001386t}{-0.0001386}$$

$$t \approx 3685.61$$

$$t \approx 3686 \text{ years}$$

#20 on review sheet on the test