

1. Determine if the following represent exponential growth or exponential decay.

a)  $y = 2(5)^x$

Growth

b)  $f(x) = 2.3(3)^{-x}$

Decay

c)  $y = \frac{1}{2}\left(\frac{8}{3}\right)^x$

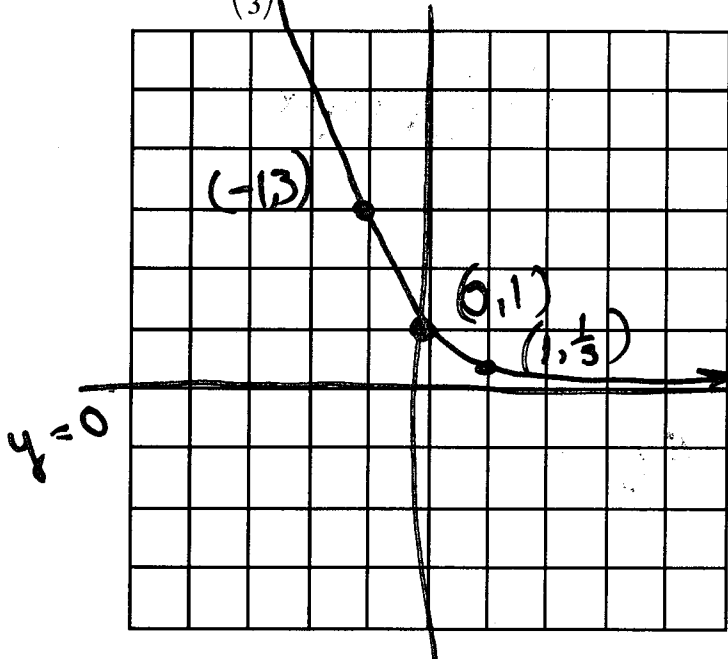
Growth

d)  $f(x) = \frac{7}{4}\left(\frac{4}{7}\right)^x$

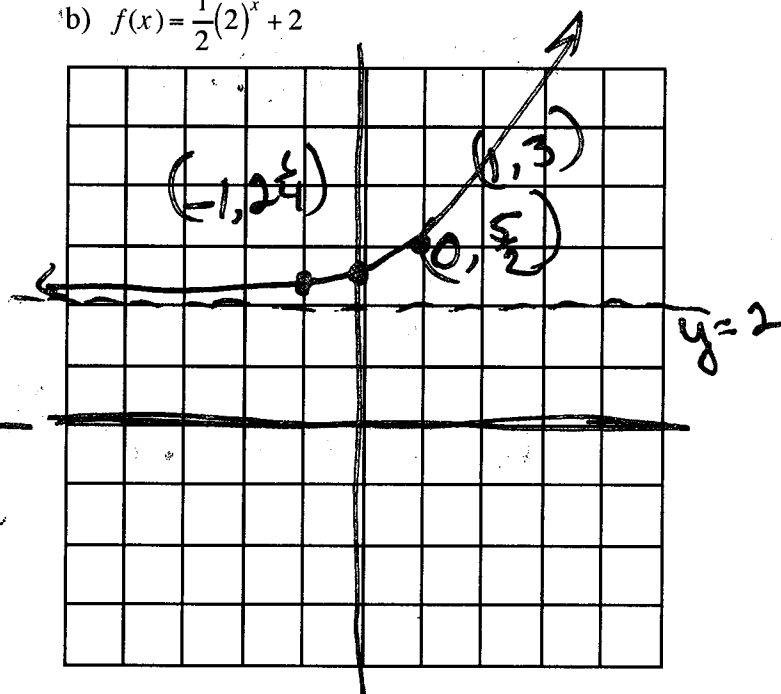
Growth

2. Graph the following. Put in you own axis where appropriate. Label (plot) at least 3 points and show the asymptote.

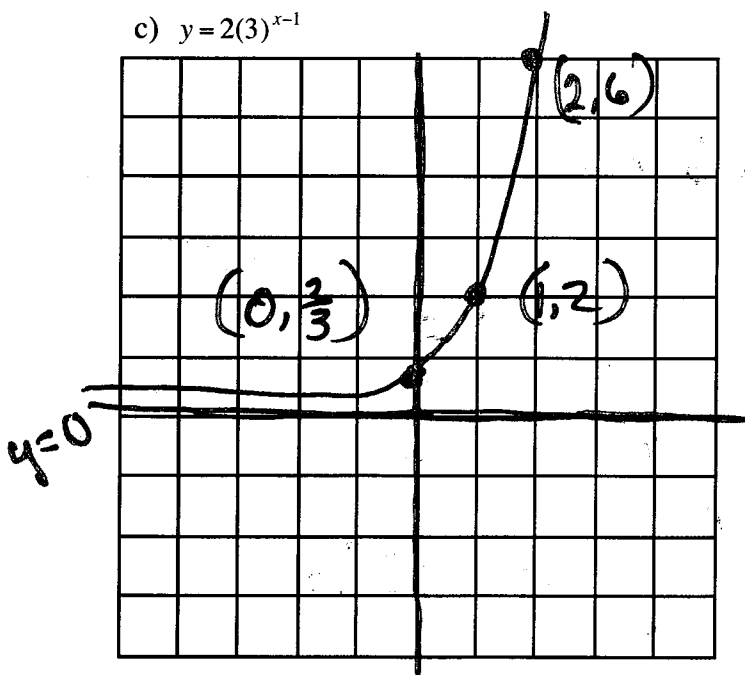
a)  $y = \left(\frac{1}{3}\right)^x$



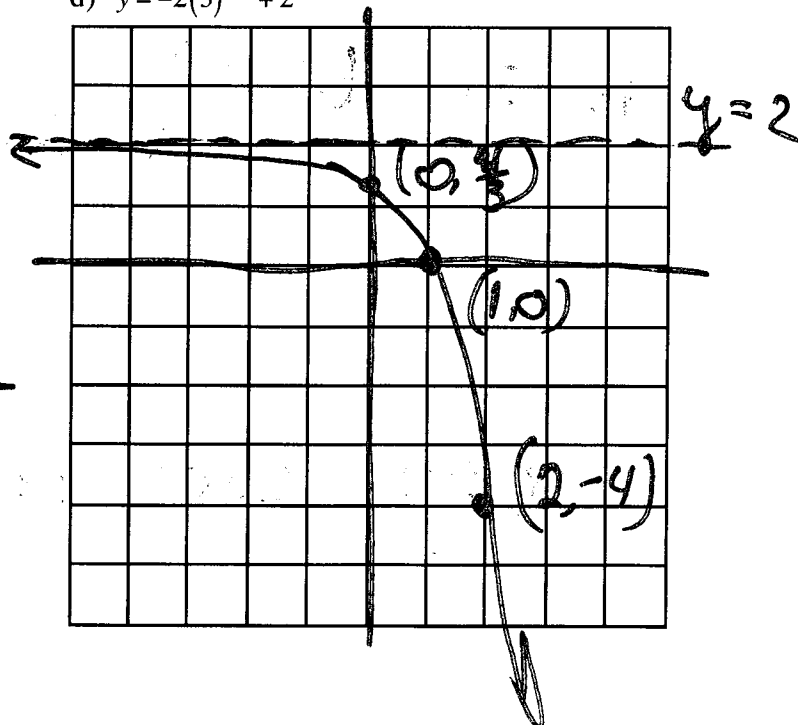
b)  $f(x) = \frac{1}{2}(2)^x + 2$



c)  $y = 2(3)^{x-1}$



d)  $y = -2(3)^{x-1} + 2$



3. Suzy's uncle put \$1,000 in the bank for her when she was born. How much will be in the account on her 16th birthday, if the bank pays 8% compounded quarterly?

$$A = 1000 \left(1 + \frac{.08}{4}\right)^{4x}$$

\$3,551.50

4. The population of Suzyville has been growing at an annual rate of 12.5% since Suzy became mayor in 2003. If the population was 1802 in 2008, what was the population in 2003?

$$1802 = P(1.125)^5$$

1000 people

5. Suzy bought a car for \$12,000 in 2005. If the car depreciates at a rate of 11% per year, how much will it be worth in 2010?

$$A = 12,000 (.89)^x$$

\$6700.87

6. Suzy took some ibuprofen. The amount of ibuprofen in a person's bloodstream decreases by 29% each hour. If she took 300 mg when she got up at 7:00 am, how much is still in her bloodstream when she goes to bed at 10:00 pm?

$$A = 300 (.71)^x$$

1.76 mg

7. Suzy was doing an experiment with bacteria. She has a petri dish with 2,300 bacteria in it. At what rate are they growing per hour, if after 9 hours there are 53,991?

$$53,991 = 2300 (1+r)^9$$

≈ 42%