

1. Graph. List the intercepts, asymptotes, domain and range.

(a) $y = -2^x + 1$

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

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

(d) $y = -\log_2(-x)$

(e) $y = -\log_3(x - 2) + 1$

(f) $y = \ln(x + e)$

2. A bacteria colony grows exponentially. The population starts with 1000. Four hours later the population is 5000.

(a) Find the growth constant k .

(b) What is the population 3 hours after the start?

(c) How long will it take for the population to reach 10,000?