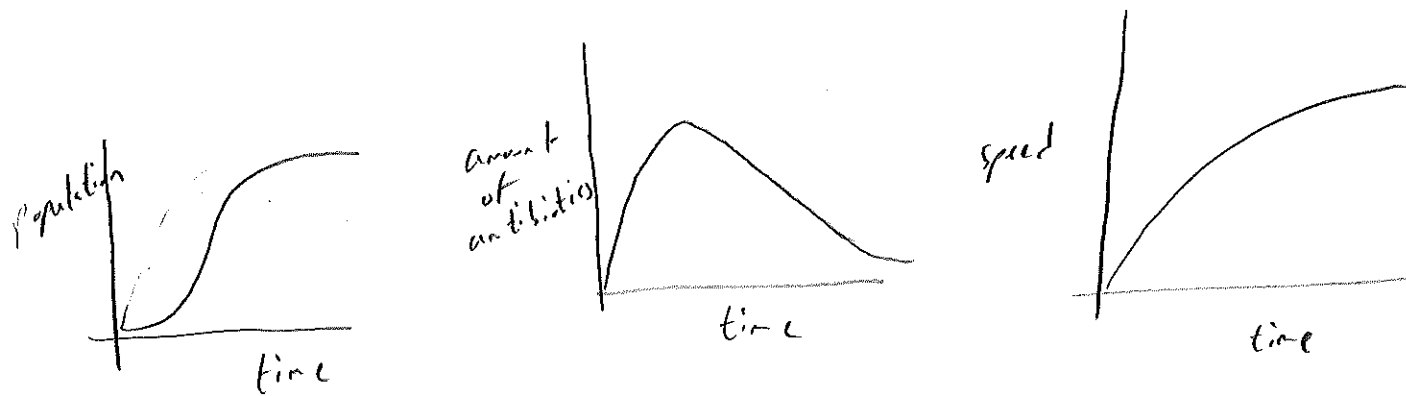


Section 1.4 Limits and End Behavior of Graphs 1.4

Q: Why do we care about a graph's long term behavior?

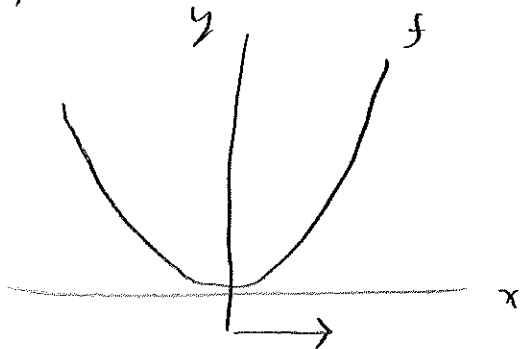
A: population growth, antibiotics, skydiving



Q: what happens when $x \rightarrow \infty$?

Ex

$$f(x) = x^2$$



as x grows, so does $f(x)$.

$x \rightarrow \infty$ means $f(x) \rightarrow \infty$.

We write this as $\lim_{x \rightarrow \infty} f(x) = \infty$.

Q: How to calculate limits without a graph? 14

Easy examples

Think:

$$\lim_{x \rightarrow \infty} x^2 = \infty \quad (\text{big number gets bigger})$$

$$\lim_{x \rightarrow \infty} \frac{1}{x} = 0 \quad (\frac{1}{\text{big number}} \text{ gets smaller})$$

Graph with (Handout)