

**Example 1.** The human population of the entire world can be modeled by

$$P = 6.8(1.011)^t$$

where  $P$  is in billions, and  $t$  is the year with  $t = 0$  corresponding to 2010 (source Wikipedia).

Find the estimated rate of growth in 2020, and interpret your answer, with units.

**Example 2.** Find the equation of the tangent line of  $f(x) = 17.5 \cdot 2^x$  at  $x = 1$ , and show a graph of the function  $f(x)$  and the tangent line.