

3. [9 points]

- a. [4 points] A residential community started a paper recycling program in 2002. According to their records, the community recycled 4000 and 12000 lbs of paper in 2005 and 2013, respectively. Let $P(t)$ be the amount of paper recycled by this community (in lbs) t years after 2002. Find a formula for $P(t)$ if you assume that it is a power function. Your answer must be written in **exact** form.

$$P(t)=\underline{\hspace{15em}}$$

- b. [5 points] Let $W(t)$ be the water consumption of the residential community, in millions of gallons, t years after 2005. The table below shows some values of $W(t)$

t	2	5	8
$W(t)$	5.38	10.51	20.52

Note: The values in the table have been rounded to the nearest 0.01.

Assume that the function $W(t)$ increases exponentially. Your answers should be written in exact form or round your answers to the nearest 0.01.

- i) What is the annual percent rate of the function $W(t)$? Show all your work.

Answer: $\underline{\hspace{15em}}$

- ii) What is the annual continuous rate of $W(t)$?

Answer: $\underline{\hspace{15em}}$