

(1) [5] The population of a certain town is growing at a decreasing rate of  $r(t)$  people per year. Using the following data for  $r(t)$ , give lower and upper estimates for the change in population over the time period  $t = 0$  to  $t = 8$ . State units with your answer.

$t$ (yrs)	0	2	4	6	8
$r(t)$ (people/yr)	100	85	50	38	10

(2) [5] The following limit represents the area under the graph of a certain function  $f(x)$  over a certain interval  $[a, b]$ . Determine  $f(x)$  and  $[a, b]$ :

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{\pi}{3n} \tan\left(\frac{i\pi}{3n}\right)$$