Find the average value for each function

\[ f(x) = -\frac{x^2}{2} + x + \frac{3}{2}; \quad [-3, 1] \]

\[ f(x) = \frac{4}{x^2}; \quad [-4, -2] \]
3. In a certain city the temperature (in °F) \( t \) hours after 9 a.m. was modeled by the function

\[ T(t) = 50 + 14 \sin \left( \frac{\pi t}{12} \right) \]

Find the average temperature from 9 a.m. to 9 p.m. Hint: What is the interval for \( t \) in this

4. Water is pumped into a tank at a rate modeled by \( W(t) = 200e^{-2t/20} \) liters per hour for \( 0 \leq t \leq 8 \) where \( t \) is measured in hours. Determine the average amount of water pumped into the tank during the first 8 hours.
The inside of a funnel of height 10 inches has circular cross sections.

At height $h$, the radius of the funnel is given by

$$r = \frac{1}{20}(3 + h^2)$$

where $0 \leq h \leq 10$. The units of $r$ and $h$ are in inches.

a) Find the average value of the radius of the funnel.