

12] The average cost of a product changes at the rate:

$\bar{C}' = \frac{-10}{x^2} + \frac{1}{10}$  and the average cost of 10 units is 20\$.

a) Find the average cost function.

$$\begin{aligned}\bar{C} &= \int \left( \frac{-10}{x^2} + \frac{1}{10} \right) dx \\ &= \int (-10x^{-2} + \frac{1}{10}) dx \\ &= \frac{-10x^{-1}}{-1} + \frac{1}{10}x + C \\ &= \frac{10}{x} + \frac{1}{10}x + C.\end{aligned}$$

to find  $C$ :  $\bar{C}(10) = 20$  dollars

$$20 = \frac{10}{10} + \frac{1}{10}(10) + C$$

$$\rightarrow 20 = 1 + 1 + C$$

$$\therefore 20 = \frac{2}{-2} + \frac{2}{2} + C \rightarrow \boxed{C = 18}$$

so  $\bar{C} = \frac{10}{x} + \frac{1}{10}x + 18$