$$f(x) = 2x + 6$$

Dividing interval $[0, 3]$ into n equal subintervals we will get such set of intervals:

$$\left\{\left[\frac{3i}{n}, \frac{3(i+1)}{n}\right], i = 0, \dots, n-1\right\}$$

Since $f(x)$ is monotonic the upper sum equals to

$$S_n = \frac{3}{n}\sum_{i=0}^{n-1} f\left(\frac{3(i+1)}{n}\right) = \frac{3}{n}\sum_{i=0}^{n-1}\left(2\left(\frac{3(i+1)}{n}\right) + 6\right)$$

$$= \frac{3}{n}\left(\frac{6}{n}\sum_{i=0}^{n-1} i + n \cdot \left(\frac{6}{n} + 6\right)\right) = \frac{3}{n}\left(\frac{6}{n}\frac{(n-1)n}{2} + 6 + 6n\right)$$

$$= \frac{9(n-1)}{n} + \frac{18}{n} + 18$$

Taking limit as n approaches to infinity we get:

$$\lim_{n\to\infty} \frac{9(n-1)}{n} + \frac{18}{n} + 18 = 9 + 18 = 27$$

So the area under the curve $f(x)$ over $[0, 3]$ equals 27.