

Some useful formulas:

$$\sum_{k=1}^n k = \frac{n(n+1)}{2}$$

$$\sum_{k=1}^n k^2 = \frac{n(n+1)(2n+1)}{6}$$

$$\sum_{k=1}^n k^3 = \frac{n^2(n+1)^2}{4}$$

$$\sum_{k=1}^n k^4 = \frac{n(n+1)(2n+1)(3n^2+3n-1)}{30}$$

$$\sum_{k=1}^n k^5 = \frac{n^2(2n^2+2n-1)(n+1)^2}{12}$$

Compute the area between the indicated values of x , above the x -axis and below the graph of the indicated function. Use the rectangular approximation of area that we used in class and then take the limit to evaluate the area. You may use left or right end points.

1. $f(x) = x^2 + 1$, $x = 0$, $x = 1$
2. $f(x) = 3x^2$, $x = 2$, $x = 4$
3. $f(x) = 3x^2 - x + 4$, $x = -1$, $x = 1$
4. $f(x) = x^3$, $x = 0$, $x = 1$
5. $f(x) = x^4$, $x = 0$, $x = 1$
6. $f(x) = x^3 + x^2$, $x = 1$, $x = 2$