

AREA WORKSHEET

Consider the following expansion formulas :

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

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

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

Find the area under the indicated curve on the given interval, using limits and the expansion formulas above.

1. $f(x) = 2 - x$ $[0, 3]$
2. $f(x) = 3x + 1$ $[0, 4]$
3. $f(x) = x^2 + 2$ $[0, 5]$
4. $f(x) = 9 - x^2$ $[0, 2]$
5. $f(x) = x^3 + 1$ $[0, 2]$
6. $f(x) = 4x + x^3$ $[0, 3]$
7. $f(x) = 5x - 3$ $[1, 5]$
8. $f(x) = \frac{1}{3}x^2 - 1$ $[2, 4]$
9. $f(x) = 2x^2 - 1$ $[-2, 1]$
10. $f(x) = 5 - 3x$ $[-4, -2]$
11. $f(x) = 5x^2 + x$ $[a, b]$
12. $f(x) = x^3$ $[a, b]$

