

(1) Use geometry to determine the following definite integrals:

a.  $\int_{-3}^3 2dx =$

b.  $\int_0^2 3x + 1dx =$

(2) Consider the function  $f(x) = \begin{cases} 5, & x \leq 4 \\ x + 1, & x > 4 \end{cases}$  and compute  $\int_2^7 f(x)dx =$

(3) Consider the area between the graph of  $y = 1 - x^2$  and the  $x$  – axis on the interval  $[2, 4]$

- a. Write the area using a definite integral.
- b. Write the area as the limit of a sum in sigma notation.
- c. Use sum formulas to compute the area using rectangles.

(4) Consider the area between the graph of  $y = x^3 - 2x$  and the  $x$  - axis on the interval  $[1, 3]$

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- b. Write the area as the limit of a sum in sigma notation.
  
  
  
  
  
  
  
  
  
  
- c. Use sum formulas to compute the area using rectangles.