

Area under a Curve

1. Find the Riemann sum for $f(x) = 3x$ from $a = 2$ to $b = 4$ using $n = 4$.
2. Find, using the definition of the integral,

$$\int_1^3 x \, dx$$

You will need to use the fact that

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

3. Write down the limit expression for

$$\int_1^3 \ln x \, dx$$

but do not evaluate the limit.