

## Math 131 - April 20, 2016

### Warm-up Problems

1. Compute the following sums

$$(a) \sum_{i=1}^{10} (2i - 3) =$$

$$(b) \sum_{i=3}^8 (2i^3 - i^2 + 2) =$$

### Lecture Problems

2. Using geometry, compute  $\int_0^4 2x + 1 \, dx$

3. Using limits of Riemann Sums, compute  $\int_0^4 2x + 1 \, dx$

(a)  $\Delta x =$

(b)  $x_i =$

(c) Continue with this and simplify (using what you found above)

$$\text{RHS} = \sum_{i=1}^n f(x_i) \Delta x =$$

(d) Take the limit as  $n \rightarrow \infty$

$$\lim_{n \rightarrow \infty} \text{RHS} = \lim_{n \rightarrow \infty} \sum_{i=1}^n f(x_i) \Delta x = \lim_{n \rightarrow \infty} (\text{What you got in last problem})$$

4. Compute  $\int_1^4 x^2 \, dx$

(a)  $\Delta x =$

(b)  $x_i =$

(c) Continue with this and simplify (using what you found above)

$$\text{RHS} = \sum_{i=1}^n f(x_i) \Delta x =$$

(d) Take the limit as  $n \rightarrow \infty$

$$\lim_{n \rightarrow \infty} \text{RHS} = \lim_{n \rightarrow \infty} \sum_{i=1}^n f(x_i) \Delta x = \lim_{n \rightarrow \infty} (\text{What you got in last problem})$$