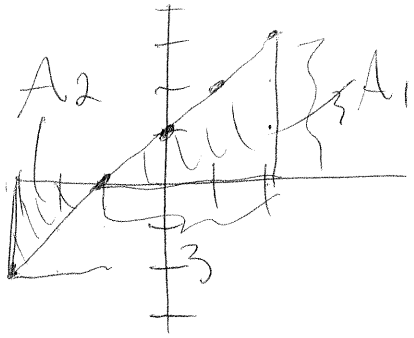
Math 12002 | Analytic Geometry & Calculus I | Fall 2016

Quiz 9 | Matt Alexander

Name: Key | Quiz Score: /10

1. (6pts) Graph the function $f(x) = x + 1$ and use the graph to find $\int_{-3}^{2} f(x)dx$.



$$\int_{-3}^{2} f(x)\,dx = A_1 - A_2$$

$$= \frac{1}{2}(3)(3) - \frac{1}{2}(2)(2)$$

$$= \frac{9}{2} - \frac{4}{2} = \frac{5}{2}$$

2. (2pts) Write the limit definition of $\int_a^b f(x)dx$.

$$\int_a^b f(x)\,dx = \lim_{n\to\infty} \sum_{i=1}^{n} f(x_i)\Delta x \quad \text{where} \quad \Delta x = \frac{b-a}{n}, \quad x_i = a + i\Delta x$$

3. (2pts) If $\int_2^3 f(x)dx = 4$, $\int_3^7 f(x)dx = 2$, and $\int_2^7 g(x)dx = -3$. Find $\int_2^7 (3f(x) + g(x))\,dx$.

$$\int_2^7 (3f(x) + g(x))\,dx = 3\int_2^7 f(x)\,dx + \int_2^7 g(x)\,dx$$

$$= 3 \cdot 6 + (-3) = 15$$

$$\int_2^7 f(x)\,dx = \int_2^3 f(x)\,dx + \int_3^7 f(x)\,dx$$

$$= 4 + 2 = 6$$