## Quiz 13 Solution

November 17, 2017

1. (2 points) Approximate the area under  $y = \ln x$  on the interval [1,3] using a left Riemann sum with four rectangles. Round to 2 decimal places.





Notice that the base of each rectangle is  $\frac{3-1}{4} = \frac{1}{2}$ . So the Left Riemann sum is  $L_4 = \frac{1}{2}\ln(1) + \frac{1}{2}\ln(1.5) + \frac{1}{2}\ln(2) + \frac{1}{2}\ln(2.5) \approx 1.01$ . **Answer:** 1.01

2. (2 points) If  $\int_{1}^{10} f(x) dx = -2$  and  $\int_{5}^{10} f(x) dx = 5$ , find  $\int_{1}^{5} f(x) dx$ . Solution:

$$\int_{1}^{5} f(x) dx = \int_{1}^{10} f(x) dx - \int_{5}^{10} f(x) dx$$
$$= -2 - 5$$
$$= -7$$

## Answer: -7

(1 point) What was most difficult for you on Exam 3?
Answer: Answers will vary.