

Quiz 7 — 10/26/17

Name: _____ Section and/or TA: _____

Answer all questions in a clear and concise manner. Unsupported answers will receive *no credit*.

1. (3 points) Find the average value of the function $f(x) = \frac{1}{x^2 + 3x + 2}$ on the interval $[1, 5]$.

Solution:

$$\text{Avg value} = \frac{1}{4} \int_1^5 \frac{dx}{x^2 + 3x + 2} = \frac{1}{4} \ln \left(\frac{x+1}{x+2} \right) \Big|_1^5 = \ln \frac{9}{7}.$$

2. (2 points) Find the volume of the solid obtained by rotating the curve $y = \frac{5}{x+1}$, $0 \leq 3x \leq 3$, about the x -axis using the disk method.

Solution:

$$V = \pi \int_0^3 \frac{5}{(x+1)^2} dx = -5\pi \frac{1}{x+1} \Big|_0^3 = \frac{15\pi}{4}$$