

Math 125C Spring 2024
Mid-Term Exam Number Two
May 16, 2024
Answers

1. (a) $\frac{1}{3}x^3(\ln x)^2 - \frac{2}{9}x^3 \ln x + \frac{2}{27}x^3 + C$

(b) $2x^2 - 3x + 4 \ln |x| - \ln |x + 1| + C$

2. (a) $-\frac{1}{4}\sqrt{1-2x^2} + \frac{1}{12}(1-2x^2)^{3/2} + C$

(b) $\ln |x - 3 + \sqrt{x^2 - 6x + 10}| + C$

3. (a) $2\sqrt{x-1} - 2 \tan^{-1} \sqrt{x-1} + C$

(b) $\frac{1}{2}$

4. (a) $\rho g \pi \int_1^{10} (\ln y)^2 (10 - y) dy$

(b) $\rho g \pi \int_1^{10} (\ln y)^2 (12.6 - y) dy$

5. $b = 3$