



Department of Mathematics and Natural Sciences
MAT 120: Integral Calculus & Differential Equations
Spring 2024
ASSIGNMENT 1

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Mark: 20

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1. Evaluate the following integral :

[3+3+2+2+2+2]

- (a) $\int \frac{\sec^4(2t)}{\tan^9(2t)} dt$
- (b) $\int \csc^n x dx$
- (c) $\int_{-4}^6 |t^3 - 4t^2 - 4t + 16| dt$
- (d) $\int 9t^{11} \cos(1 - t^6) dt$
- (e) $\int [9 \sin^5(3x) - 2 \cos^2(3x)] \operatorname{cosec}^4(3x) dx$
- (f) $\int [17(xe^x + e^x) \sin(xe^x) - 14 \sin(x)] dx$

2. Find the Riemann sum of the function $f(x) = x^2 + 5x + 6$ over the interval $[1, 3]$ using [2+2+2]

- (a) left endpoints
- (b) right endpoints, and
- (c) midpoints.