

Math 1300
Fall 2025
Quiz 13

Name: _____

1. (2 points) Use the information in the table to evaluate $\int_1^4 f'(z) dz$.

z	0	1	2	3	4	5
$f(z)$	5	2	0	3	4	9
$f'(z)$	-1	0	3	1	-2	4
$f''(z)$	2	1	-1	-2	0	1

- (a) -4
(b) -2
(c) 0
(d) 2
(e) 4
2. (2 points) Evaluate $\int \frac{6}{x^2 + 9} dx$.
- (a) $6 \arctan\left(\frac{x}{3}\right) + C$
(b) $2 \arctan\left(\frac{x}{3}\right) + C$
(c) $\frac{1}{3} \arctan\left(\frac{x}{3}\right) + C$
(d) $2 \arctan(3x) + C$
(e) $\arctan\left(\frac{x}{9}\right) + C$
3. (2 points) Let $r(t)$ be the snowfall rate (in centimeters per hour) at time t hours after midnight during a winter storm. Suppose

$$\int_2^6 r(t) dt = 24.$$

Which statement best describes this equation?

- (a) At 2:00 am, snow is falling at a rate of 24 cm per hour.
(b) At 6:00 am, snow is falling at a rate of 24 cm per hour.
(c) A total of 24 centimeters of snow has fallen between 2:00 am and 6:00 am.
(d) The average snowfall rate between 2:00 am and 6:00 am is 24 cm per hour.
(e) At 6:00 am, a total of 24 centimeters of snow has fallen since midnight.

4. (4 points) A particle moves along a line so that its velocity (in meters per second) at time t (in seconds) is

$$v(t) = 2t - 6.$$

- (a) Find the displacement of the particle during the time period $0 \leq t \leq 5$.

- (b) Find the total distance traveled by the particle during this time period.