

NOTE: You have 12 MINUTES to work on this quiz. At that point, your work will be collected, and you will have 10 MINUTES to work with your team on it. Your final grade will be a combination of the scores on the work on the two efforts.

1. (3 points) Suppose that $\int_1^3 g(x) dx = 5$, $f(x)$ is given by the table below, that $F'(x) = f(x)$, and that $F(2) = 4$. Find $\int_1^3 (2f(x) - g(x)) dx$.

$x =$	1	1.5	2	2.5	3
$f(x) =$	2	3	5	4	4

2. (3 points) If the sleeplessness rate of students is given by $r(t) = t \sin(t)$, in missed hours/night (with t = weeks into the semester), estimate how many hours of sleep a student misses in the course of the semester (which is about 14 weeks long). Are there any times when a student has caught up on sleep? Explain.

3. (3 points) A math professor, consigned to endless purgatory for manifold grading sins, is grading an infinite stack of calculus quizzes. His grading rate r (in quizzes/day) increases as shown in the following table. In addition, his efficiency in red-ink usage u (in quizzes/gallon) depends on his quiz grading rate, as shown. Estimate the total amount of ink he uses for the time interval shown.

t (days)	0	15	30	45	60
r (quizzes/day)	25	30	37	45	53
u (quizzes/gallon)	20	22	24	26	30