Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Lance Burger **Course:** Math 76 Calculus 2 **Book:** California State University, Fresno: Math 75: Calculus	**Assignment:** Team Test 1 (20 points possible)

1. The table shows the velocity of a remote controlled race car moving along a dirt path for 8 seconds. Estimate the distance traveled by the car using 8 subintervals of length 1 with left-end point values.

Time (sec)	Velocity (in. / sec)
0	0
1	10
2	17
3	13
4	23
5	26
6	28
7	12
8	5

- A. 258 in
- B. 129 in
- C. 119 in
- D. 134 in

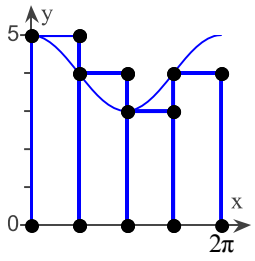
2. Use a finite approximation to estimate the area under the graph of the given function on the stated interval as instructed.

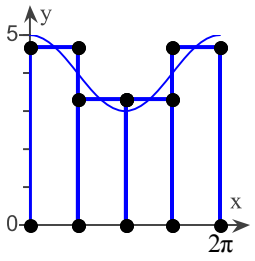
$f(x) = \frac{1}{x}$ between $x = 1$ and $x = 7$, using the midpoint sum with two rectangles of equal width

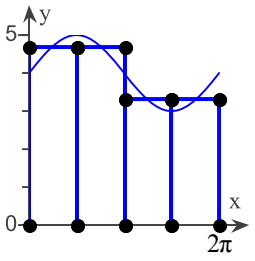
- A. $\frac{584}{3025}$
- B. $\frac{96}{55}$
- C. $\frac{876}{3025}$
- D. $\frac{32}{55}$

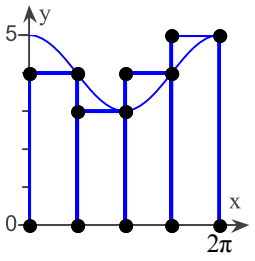
Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Lance Burger **Course:** Math 76 Calculus 2 **Book:** California State University, Fresno: Math 75: Calculus	**Assignment:** Team Test 1 (20 points possible)

3. Graph the function $f(x) = \cos x + 4$ over the interval $[0,2\pi]$. Partition the interval into 4 subintervals of equal length. Then add to your sketch the rectangles associated with the Riemann sum $\sum_{k=1}^{4} f(c_k)\ \Delta x_k$, using the midpoint in the kth subinterval for c_k.

A. 

B. 

C. 

D. 

4. Graph the integrand and use geometry to evaluate the integral.

$$\int_{-3}^{3} (|x| + 6)\,dx$$

A. 54

B. 81

C. 45

D. 15

5. Suppose that f and g are continuous and that $\int_{6}^{10} f(x)\,dx = -5$ and $\int_{6}^{10} g(x)\,dx = 10$.

Find $\int_{10}^{6} [g(x) - f(x)]\,dx$.

A. 5

B. 15

C. -15

D. -5

Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Lance Burger **Course:** Math 76 Calculus 2 **Book:** California State University, Fresno: Math 75: Calculus	**Assignment:** Team Test 1 (20 points possible)

6. Suppose that g is continuous and that $\int_1^5 g(x)\,dx = 8$ and $\int_1^{10} g(x)\,dx = 13$. Find $\int_{10}^5 g(x)\,dx$.

A. -21

B. 5

C. -5

D. 21

7. Evaluate the integral.

$$\int_0^{\pi} \frac{3 - \sin 8x}{8}\,dx$$

A. $\frac{3\pi}{8} - \frac{1}{16}$

B. $\frac{3\pi}{8}$

C. $\frac{3\pi}{8} + \frac{1}{16}$

D. $-\frac{3\pi}{8}$

8. Find the derivative.

$$\frac{d}{dx}\int_1^{\sqrt{x}} 18t^7\,dt$$

A. $12x^3$

B. $9x^3$

C. $\frac{9}{2}x^3 - \frac{9}{2}$

D. $18x^{7/2}$

Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Lance Burger **Course:** Math 76 Calculus 2 **Book:** California State University, Fresno: Math 75: Calculus	**Assignment:** Team Test 1 (20 points possible)

9. Find the average value of the function over the given interval.

$f(x) = 10x$ on $[7,9]$

- A. 320
- B. 40
- C. 80
- D. 160

10. Find the average value of the function over the given interval.

$y = x^2 - 3x + 6$; $[0,6]$

- A. 6
- B. 39
- C. 9
- D. 24

11. Find the values(s) of x at which the given function equals its average value on the given interval.

$f(x) = |x|$; $[0,4]$

- A. $\frac{5}{2}$
- B. 2
- C. 3
- D. 1

Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Lance Burger **Course:** Math 76 Calculus 2 **Book:** California State University, Fresno: Math 75: Calculus	**Assignment:** Team Test 1 (20 points possible)

12. Use the substitution formula to evaluate the integral.

$$\int_0^{7\pi/4} \tan\frac{x}{7}\,dx$$

A. $\dfrac{-7\sqrt{2}}{2}$

B. $\dfrac{7\ln 2}{2}$

C. $\dfrac{-7\ln 2}{2}$

D. $\dfrac{7\sqrt{2}}{2}$

13. Find the area of the region between the curve $y = 6x/(1+x^2)$ and the interval $-2 \le x \le 2$ of the x-axis.

A. $6\ln 5$

B. $\ln 5$

C. $6e^5$

D. 0

14. Find the area of the region between the curve $y = 5^{3-x}$ and the interval $0 \le x \le 2$ on the x-axis.

A. $120\ln 5$

B. $\dfrac{120}{\ln 5}$

C. $\dfrac{125}{\ln 5}$

D. 125

Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Lance Burger **Course:** Math 76 Calculus 2 **Book:** California State University, Fresno: Math 75: Calculus	**Assignment:** Team Test 1 (20 points possible)

15. Evaluate the integral by using multiple substitutions.

$$\int 7(3x^2 - 6)\ \textbf{sin}^{5}(x^3 - 6x)\ \textbf{cos}\ (x^3 - 6x)\,dx$$

A. $\frac{6}{7}\textbf{sin}^{6}(x^3 - 6x) + C$

B. $\frac{7}{6}\textbf{cos}^{6}(3x^2) + C$

C. $35\textbf{sin}^{4}(x^3 - 6x) + C$

D. $\frac{7}{6}\textbf{sin}^{6}(x^3 - 6x) + C$

16. (This problem is worth 5 pts!) Show all work for full credit.
Using the defintion of the defininte integral as an infinite limit of the Riemann sum, prove that:

$$\int_0^1 x^2 - 2x + 1\ dx = \frac{1}{3}.$$

Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Lance Burger **Course:** Math 76 Calculus 2 **Book:** California State University, Fresno: Math 75: Calculus	**Assignment:** Team Test 1 (20 points possible)

1.	B
2.	B
3.	B
4.	C
5.	C
6.	C
7.	B
8.	B
9.	C
10.	C
11.	B
12.	B
13.	A
14.	B
15.	D
16.	