

Calculus Chapter 4 Review Answers

I. Antiderivative and Indefinite Integration

A. Evaluate the integrals

| | |
|------------------------------------|--|
| 1. $\frac{1}{3}x^3 + c$ | 2. $\frac{3}{4}x^4 + \frac{7}{2}x^2 + c$ |
| 3. $x^3 + \frac{7}{2}x^2 - 3x + c$ | 4. $\frac{1}{3}x^3 - \frac{1}{2}x^2 + c$ |
| 5. $\frac{2}{5}x^{5/2} + c$ | 6. $8x^{1/2} + \frac{5}{2}x^2 + c$ |
| 7. $5\sec x + c$ | 8. $-3\csc x + c$ |

B. $f(x) = 8x^{1/2} + 4$

C. $f(x) = \frac{1}{6}x^3 + x^2 + 3x - 1$

D. 354 m, 10.681 s, -92.172 m/s

E. $s(t) = 21t^2 + 5t + 9$

II. Riemann Sums and Areas as Definite Integrals

A. Just sketch graph and shade from $x = 0$ to $x = 3$

B. Check with Reimann1 program on calculator

C. Check with Reimann1 program on calculator

D. Check with Reimann1 program on calculator.

E. 14.154.

III. 1st and 2nd Fundamental Theorem of Calculus and Average Value

Evaluate and use your calculator (fnint) to check your answers.

| | |
|-------------------------|------------------|
| A. 8 | B. 6 |
| C. 1 | D. $\frac{1}{2}$ |
| E. $\frac{\sqrt{2}}{2}$ | F. 4 |

G. $\frac{17}{3}$

H. $(2x^2 + 5)^2$

I. $6x\cos(9x^4) + 30x\tan(3x^2)$

IV. Integration by Substitution

| | |
|-------------------------------------|--|
| A. $\frac{3}{5}(x^2 + 5)^{5/3} + c$ | B. $\frac{2}{9}(x^3 + 3x)^{3/2} + c$ |
| C. $\frac{4}{5}(5x + 2)^{1/2} + c$ | D. $-\frac{1}{15}(9 - 5x^2)^{3/2} + c$ |
| E. $\frac{1}{3}\sin(3x) + c$ | F. $-3\cos(x^2) + c$ |
| G. $\frac{2}{3}(\sec x)^{3/2} + c$ | H. $-3\csc x + c$ |
| I. $\frac{486}{5}$ | J. no answer b/c imaginary |

V. Trapezoidal Rule

A. check with reimann1

B. check with reimann1