

Principles of Calculus Modeling: An Interactive Approach by Donald Kreider, Dwight Lahr, and Susan Diesel
Exercises for Section 2.15

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1. (1 pt)
Find $\int x^{11} dx$.

2. (1 pt)
Find $\int \frac{-5 \sin(x) + 2 - 4 \cos^3(x)}{\cos^2(x)} dx$.

3. (1 pt)
Find $\int \left(\frac{x^9}{9} - \frac{x^5}{5} + \frac{x^3}{3} - 1 \right) dx$.

4. (1 pt)
Find $\int \sec(2-x) \tan(2-x) dx$.

5. (1 pt)
Find the solution $y = y(x)$ to the initial-value problem

$$\begin{cases} y' = x^{1/9} \\ y(1) = 8 \end{cases}$$
 $y(x) =$ _____
 On what interval is the solution valid? Type **-infinity** for $-\infty$ or **infinity** for ∞ , without quotes.
 _____ $< x <$ _____

6. (1 pt)
Find the solution $y = y(x)$ to the initial-value problem

$$\begin{cases} y' = \sin(8x) \\ y(\pi/8) = 1 \end{cases}$$
 $y(x) =$ _____
 On what interval is the solution valid? Type **-infinity** for $-\infty$ or **infinity** for ∞ , without quotes.

_____ $< x <$ _____

7. (1 pt)
Find the solution $y = y(x)$ to the initial-value problem

$$\begin{cases} y'' = 7x + \sin(x) + 10 \\ y(0) = -14 \\ y'(0) = 0 \end{cases}$$
 $y(x) =$ _____
 On what interval is the solution valid? Type **-infinity** for $-\infty$ or **infinity** for ∞ , without quotes.
 _____ $< x <$ _____

8. (1 pt)
Find the solution $y = y(x)$ to the initial-value problem

$$\begin{cases} y'' = 3x^2 - 5 \\ y(0) = 0 \\ y'(0) = 5 \end{cases}$$
 $y(x) =$ _____

9. (1 pt)
Find the solution $y = y(x)$ to the initial-value problem

$$\begin{cases} y' = -3x^2 + \cos x \\ y(0) = 0 \end{cases}$$
 $y(x) =$ _____

10. (1 pt)
Find the solution $y = y(x)$ to the initial-value problem

$$\begin{cases} y' = 2 \sin x + x^{-0.5} \\ y(1) = -2 \end{cases}$$
 $y(x) =$ _____