1. Find the most general antiderivative of \( f(x) = 6x^2 - 8x + 7 \).

2. Find the most general antiderivative of \( f(x) = 7x^{2/5} - 8x^{3/5} \).

3. Find the most general antiderivative of \( f(x) = \frac{10}{x^5}, \ x > 0 \).

4. Find the most general antiderivative of the function on the interval \( \left(-\frac{\pi}{2}, \frac{\pi}{2}\right) \).

\[ f(x) = 3e^x + 4\sec^2 x \]

5. Find \( f \) if \( f''(x) = \sin x \).

6. Find \( f \) if \( f'(t) = 2\cos t + \sec^2 t \) for \( -\frac{\pi}{2} < t < \frac{\pi}{2} \) and \( f\left(\frac{\pi}{3}\right) = 9 \).

7. Find \( f(t) \) for \( -\frac{\pi}{2} < t < \frac{\pi}{2} \) if \( f'(t) = 14\cos t + \sec^2 t \) and \( f\left(\frac{\pi}{3}\right) = 2 \).

   a. \( f(t) = 14\sin t + \cot t + 2 - 15\sqrt{3} \)

   b. \( f(t) = 7\sin t + \tan t + 2 - 15\sqrt{3} \)
c. \( f(t) = 7 \sin t - \tan t + 2 - 13\sqrt{3} \)

d. \( f(t) = 14 \sin t + \cot t + 2 - 8\sqrt{3} \)

e. \( f(t) = 14 \sin t + \tan t + 2 - 8\sqrt{3} \)

8.
Find \( f \) if \( f''(\theta) = \sin(\theta) + \cos(\theta), f(0) = 7, \) and \( f'(0) = 4. \)

9.
Find \( f \) if \( f''(\theta) = \sin \theta + \cos \theta, f(0) = 1, \) and \( f'(0) = 2. \)

a. \( f(\theta) = \sin \theta - \cos \theta + \theta + 2 \)

b. \( f(\theta) = -2 \cos \theta + 2\theta + 3 \)

c. \( f(\theta) = 2\theta + 1 \)

d. \( f(\theta) = -2 \sin \theta + 4\theta + 2 \)

e. \( f(\theta) = -\sin \theta - \cos \theta + 3\theta + 2 \)

10.
Find \( f \) if \( f''(x) = 4 - 36x, f(2) = 6, \) and \( f(0) = 6. \)

11.
Find \( f \), given that

\[ f''(t) = 9e^t + 2\sin t, \quad f(0) = 0, \quad f(\pi) = 0 \]

12.
Given that the graph of \( f \) passes through the point \((3, 48)\) and that the slope of its tangent line at \((x, f(x))\) is \( 8x + 3 \), find \( f(4) \).

\[ f(4) = \]

13.
A particle has velocity \( v(t) = \sin t - \cos t \) and its initial position is \( s(0) = 6 \). Find the position function of the particle.

14.
A particle has velocity $v(t) = 7.5\sqrt{t}$ and its position at $t = 1$ is $s(1) = 10$. Find the position function of the particle.

15. A particle's acceleration is given by $a(t) = t - 8$. Its initial position is $s(0) = 17$ and its initial velocity is $v(0) = 6$. Find the position function of the particle.