

Anti-Derivatives and Differential Equations

$$\frac{d}{dx}[f(x)] = g(x) \text{ where } f(x) = G(x) + C$$

Determine $f(x)$

1. $f'(x) = \sqrt{x^5} - \frac{4}{\sqrt[5]{x}}$

2. $f'(x) = 8x - 3\sec^2(x)$

3. $f'(x) = 2x - 3\sin(x); f(0) = 5$

4. $f'(x) = \frac{x^2 + \sqrt{x}}{x}; f(1) = 3$

5. $f''(x) = 1 - 6x + 48x^2; f(0) = 1, f'(0) = 2$

6. $f''(x) = 2x^3 + 3x^2 - 4x + 5; f(0) = 2, f(1) = 0$

7. $f''(x) = 2 + \cos(x); f(0) = -1, f\left(\frac{\pi}{2}\right) = 0$

8. $f'''(x) = \sin(x); f(0) = 1, f'(0) = 1, f''(0) = 1$