

1. Find the antiderivative of each function. Write answers with no negative exponents.

(a) $f(x) = 12x^3 - 8x + 5$	(b) $f(x) = 12\sqrt{x}$
(c) $f(x) = \frac{12}{x^2}$	(d) $f(x) = \frac{12}{\sqrt{x}}$
(e) $f(x) = \frac{5x^4 - 7x^3 + 3x^2 - 4x}{x^3}$	(f) $f(x) = 3e^{7x}$
(g) $f(x) = 5x^4 + \frac{5}{x^4} + \frac{x^4}{5} + 5\sqrt{x}$	(h) $f(x) = (3x + 2)(x - 5)$

2. Find the function $f(x)$ such that $f'(x) = 6x^2 + 8x - 5$ and $f(3) = 9$.

3. Find the function $f(x)$ such that $f'(x) = \frac{4}{x}$ and $f(e) = 10$.

4. Evaluate each definite integral using the Fundamental Theorem of Calculus.

(a) $\int_1^3 (1 + 2x - 4x^3) dx$	(b) $\int_4^9 \frac{3}{\sqrt{x}} dx$	(c) $\int_0^{2.6} 8.4e^{0.4t} dt$
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Answers

1(a) $3x^4 - 4x^2 + 5x + C$	(b) $8x^{3/2} + C$	(c) $-\frac{12}{x} + C$
(d) $24x^{1/2} + C$	(e) $\frac{5x^2}{2} - 7x + 3\ln x + \frac{8}{x^3} + C$	(f) $\frac{3}{7}e^{7x} + C$
(g) $x^5 - \frac{5}{3x^3} + \frac{1}{25}x^5 + 4x^{5/4} + C$	(h) $x^3 - \frac{13}{2}x^2 - 10x + C$	2. $f(x) = 2x^3 + 4x^2 - 5x - 66$
3. $f(x) = 4\ln x + 6$	4. (a) -70 (b) 6 (c) $21(e^{1.04} - 1) \approx 38.41$	