

1. Which one of the following is $f(x)$ if $f' = 3x^2 - 2x + 5$ and $f(1) = 7$?
- A) $x^3 - x + 2$ B) $3x^3 - 2x^2 + 5x + 2$
 C) $x^3 - x^2 + 5x + 2$ D) $x^3 + x^2 + 5x + 2$
 E) $x^3 + x^2 - 5x + 7$
2. $\int_1^4 \sqrt{x} dx = ?$
- A) $\frac{14}{3}$ B) $\frac{13}{3}$ C) 4 D) 3 E) 2
3. $\int_1^2 \frac{2x^3 + 1}{x^2} dx = ?$
- A) 2 B) $\frac{5}{2}$ C) 3 D) $\frac{7}{2}$ E) $\frac{9}{2}$
4. If $\int_a^b (2x+3) dx = 50$ and $\int_a^b dx = 5$, find $a + b$.
- A) 11 B) 10 C) 9 D) 8 E) 7
5. $\int_3^5 \frac{dx}{(2-x)^3} = ?$
- A) $-\frac{41}{2}$ B) $-\frac{5}{9}$ C) $-\frac{4}{9}$ D) $\frac{4}{9}$ E) $\frac{5}{9}$
6. $\int e^x \cdot \sin e^x \cdot \cos e^x dx = ?$
- A) $\frac{1}{2} \sin^2 e^x + c$ B) $\frac{1}{2} \cos^2 e^x + c$
 C) $e^x + \sin^2 e^x + c$ D) $e^x - \cos^2 e^x + c$
 E) $\sin^2 e^x + c$
7. $\int_4^9 10^{\log \sqrt{x}} dx = ?$
- A) 1 B) $\frac{19}{3}$ C) $\frac{38}{3}$ D) $\frac{40}{3}$ E) $\frac{57}{2}$

8. $\int_1^2 \frac{dx}{(2x+1)^2} = ?$
- A) $\frac{1}{15}$ B) $\frac{1}{10}$ C) $\frac{1}{25}$ D) $\frac{1}{9}$ E) $\frac{2}{15}$
9. $\int_{\frac{\pi}{2}}^{\pi} \cos^2 x \sin 2x dx = ?$
- A) $-\frac{1}{2}$ B) $-\frac{1}{3}$ C) $-\frac{1}{4}$ D) $\frac{1}{4}$ E) $\frac{1}{2}$
10. $\int_2^6 \frac{xdx}{\sqrt{x^2+45}} = ?$
- A) 1 B) 2 C) 3 D) 4 E) 5
11. $\int_0^{\pi/2} 3 \sin 2x \cdot \cos x dx = ?$
- A) 1 B) 2 C) -1 D) -2 E) 3
12. $\int_{\pi/4}^{\pi/2} \sin^2 x dx = ?$
- A) $\frac{\pi+2}{8}$ B) $\frac{\pi-2}{8}$ C) $\frac{\pi-2}{4}$
 D) $\frac{\pi+1}{4}$ E) $\frac{\pi+2}{4}$
13. $\int \frac{\cos 2x}{\sin^2 x} dx = ?$
- A) $-2x - \cot x + c$ B) $2x + \cot x + c$
 C) $2x - \cot x + c$ D) $-2x + \cot x + c$
 E) $\ln(\sin^2 x) + c$

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