1. If $I=\int_1^4(\{x\})^{[x]}dx$, then $\frac{24}{13}I$ is equal to: (where $[\cdot]$, $\{\cdot\}$ represents GIF and fraction part function respectively)

(1) 1 (2) 2

(3) 3 (4) 4

2. The value of $\int_0^{2\pi}[\sin 2x(1+\cos 3x)]dx$, where $[t]$ denotes the greatest integer function is

(1) π (2) 2π

(3) $-\pi$ (4) -2π

3. The value of the integral $\int_{1/e}^{e}|\log x|dx$ is

(1) $1-\frac{1}{e}$ (2) $2\left(1-\frac{1}{e}\right)$

(3) $e^{-1}-1$ (4) None of these

4. $\int_{-3}^{2}\{|x+1|+|x+2|+|x-1|\}\,dx$ is equal to

(1) $\frac{31}{2}$ (2) $\frac{35}{2}$

(3) $\frac{47}{2}$ (4) $\frac{39}{2}$

5. The integral value of $\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}}\frac{x}{1+\sin x}dx=$

(1) $\pi\left(\sqrt{2}+1\right)$ (2) $2\pi\left(\sqrt{2}-1\right)$

(3) $2\pi\left(\sqrt{2}+1\right)$ (4) $\frac{\pi}{\sqrt{2}+1}$

6. If $I_1=\int_0^{\pi}\frac{x\sin x}{1+\cos^2 x}dx$, $I_2=\int_0^{\pi}x\sin^4 x\,dx$ then $I_1:I_2=$

(1) 3 : 4 (2) 1 : 2

(3) 4 : 3 (4) 2 : 3

7. The value of $\int_{-\pi/2}^{\pi/2}\frac{dx}{[x]+[\sin x]+4}$, where $[t]$ denotes the greatest integer less than or equal to t, is

(1) $\frac{3}{20}(4\pi-3)$ (2) $\frac{3}{10}(4\pi-3)$

(3) $\frac{1}{12}(7\pi-5)$ (4) $\frac{1}{12}(7\pi+5)$

8. $\int_{-1}^{1}\frac{\sqrt{1+x+x^2}-\sqrt{1-x+x^2}}{\sqrt{1+x+x^2}+\sqrt{1-x+x^2}}dx=$

(1) $\frac{3\pi}{2}$ (2) $\frac{\pi}{2}$

(3) 0 (4) -1

9. The value of $\int_0^{200}[\tan^{-1}x]dx$ is (where $[t]$ represents greatest integer less than or equal to t)

(1) $200-5\tan 1$ (2) $200(\tan 1-1)$

(3) 200 (4) $200-\tan 1$

10. The value of $\int_0^{\pi/2}sgn\left(\sin^2 x-\sin x+\frac{1}{2}\right)dx$ is equal to, (where, $sgn(x)$ denotes the signum function of x)

(1) 0 (2) 1

(3) π (4) $\frac{\pi}{2}$