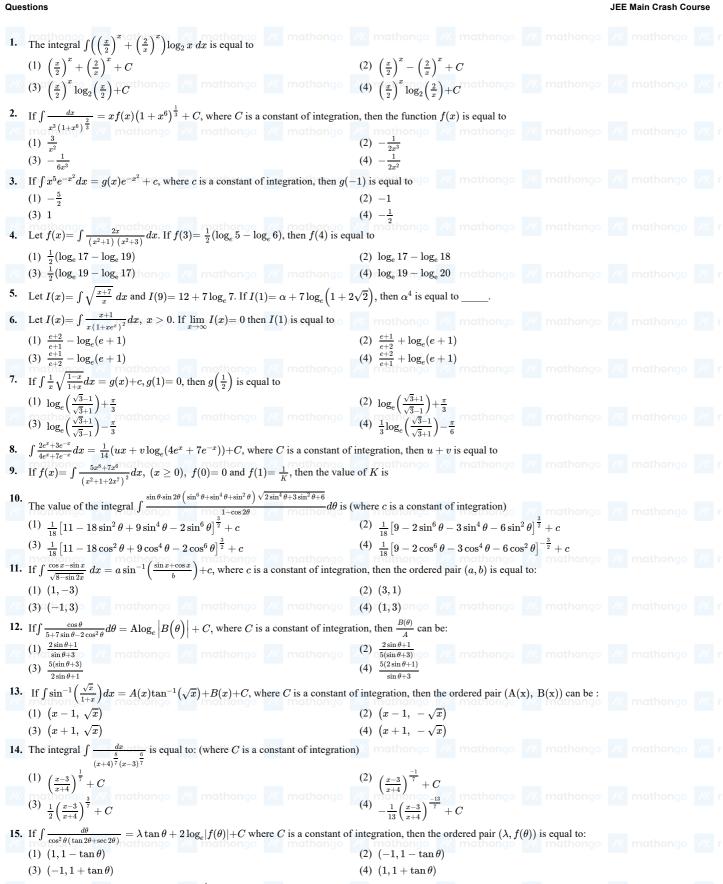


1	Most Important PYQs Questions	Most Important PYQs					
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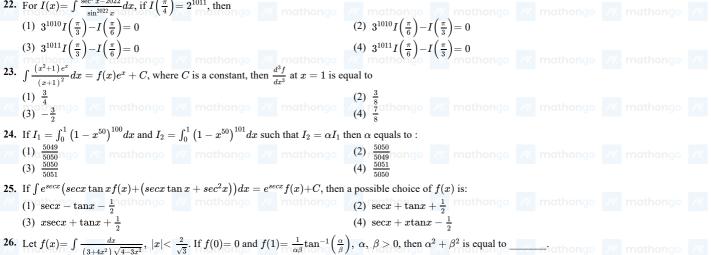
16. If 
$$\int \frac{\cos x dx}{\sin^3 x \left(1+\sin^6 x\right)^{\frac{2}{3}}} = f(x) \left(1+\sin^6 x\right)^{\frac{1}{\lambda}} + c$$
, where  $c$  is a constant of integration, then  $\lambda f\left(\frac{\pi}{3}\right)$  is equal to  $\frac{\pi}{3}$ 

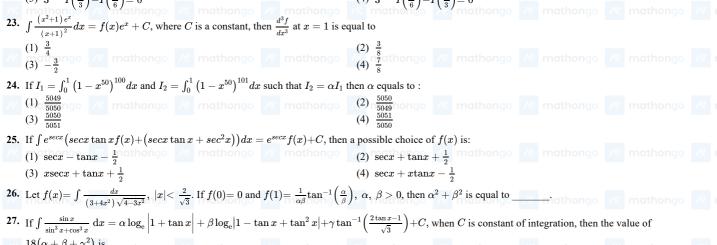
$$\frac{1}{\sin^3 x \left(1+\sin^6 x\right)^{\frac{2}{3}}} \int_{0}^{\infty} \int_{0}^{\infty}$$

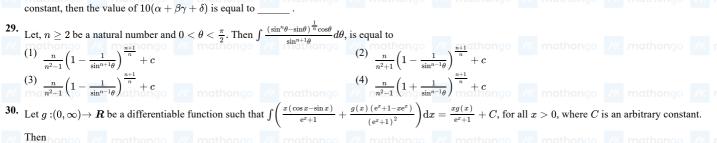
$$\frac{1}{2}$$
  $\frac{9}{8}$  ongo  $\frac{9}{8}$  mathongo  $\frac{9}{$ 



Most Important PYQs Indefinite Integration Questions  JEE Main Crash Course					
17. The integral $\int \frac{2x^3-1}{x^4+x} dx$ , is equal to // mathongo // mathongo					
$(1) \frac{1}{2} \log_e \frac{\left(x^3+1\right)^2}{\left x^3\right } + C$	(2) $\log_e \frac{ x^3+1 }{x^2} + C$				
(3) $\log_e \left  \frac{(x^3+1)}{x} \right  + C$ athongo /// mathongo /// mathongo	(4) $\frac{1}{2}\log_e\frac{ x^3+1 }{x^2}+C$ mathongo /// mathongo ///				
18. $\int \sec^2 x \cdot \cot^{\frac{4}{3}} x dx$ is equal to					
	$(2) = \frac{3}{4} \tan^{-\frac{4}{3}} x + C$ mathongo /// mathongo ///				
(3) $-3\tan^{-\frac{1}{3}}x + C$	(4) $-3\cot^{-\frac{1}{3}}x + C$				
19. $\int \frac{\sin\frac{5x}{2}}{\sin\frac{x}{2}} dx$ , is equal to athongo /// mathongo /// mathongo					
$(1)  x+2\sin x+\sin 2x+c$	(2) $2x + \sin x + \sin 2x + c$				
(3) $x+2\sin x+2\sin 2x+c$ 20. If $\int \frac{\sqrt{1-x^2}}{x^4} dx = A(x) \left(\sqrt{1-x^2}\right)^m + C$ , for a suitable chosen integer m and	(4) $2x + \sin x + 2\sin 2x + c$				
<b>20.</b> If $\int \frac{\sqrt{1-x^2}}{x^4} dx = A(x) \left(\sqrt{1-x^2}\right)^m + C$ , for a suitable chosen integer m and	d a function $A(x)$ , where $C$ is a constant of integration, then $(A(x))^m$ equals :				
(1) $\frac{-1}{27x^9}$ (3) $\frac{1}{27x^6}$ mathongo /// mathongo /// mathongo	(2) $\frac{-1}{3x^3}$ (4) $\frac{1}{9x^4}$ thongo /// mathongo /// mathongo ///				
<b>21.</b> If $I(x) = \int e^{\sin^2 x} (\cos x \sin 2x - \sin x) dx$ and $I(0) = 1$ , then $I\left(\frac{\pi}{3}\right)$ is equal to					
	$/(2)$ $r_{\frac{1}{2}}^{\frac{3}{4}}$ rongo /// mathongo /// mathongo ///				
(3) $-e^{\frac{3}{4}}$	(4) $e^{\frac{3}{4}}$				
<b>22.</b> For $I(x) = \int \frac{\sec^2 x - 2022}{\sin^2 2022} dx$ , if $I\left(\frac{\pi}{4}\right) = 2^{1011}$ , then					
22. For $I(x) = \int \frac{\sec^2 x - 2022}{\sin^2 202} dx$ , if $I\left(\frac{\pi}{4}\right) = 2^{1011}$ , then  (1) $3^{1010}I\left(\frac{\pi}{3}\right) - I\left(\frac{\pi}{6}\right) = 0$	(2) $3^{1010}I\left(\frac{\pi}{6}\right) - I\left(\frac{\pi}{3}\right) = 0$				
(3) $3^{1011}I\left(\frac{\pi}{3}\right) - I\left(\frac{\pi}{6}\right) = 0$	(4) $3^{1011}I(\frac{\pi}{6}) - I(\frac{\pi}{3}) = 0$				
23. $\int \frac{(x^2+1)e^x}{(x+1)^2} dx = f(x)e^x + C$ , where C is a constant, then $\frac{d^3f}{dx^3}$ at $x=1$ is equal to $\frac{d^3f}{dx^3}$ .	qual to				
$\frac{(1)^{\frac{3}{4}}}{(3)^{\frac{\alpha}{2}} \frac{3}{2}} \operatorname{ngo} $ mathongo /// mathongo /// mathongo					
<b>24.</b> If $I_1 = \int_0^1 \left(1 - x^{50}\right)^{100} dx$ and $I_2 = \int_0^1 \left(1 - x^{50}\right)^{101} dx$ such that $I_2 = \alpha I_1$ then $\alpha$ equals to :					







30. Let 
$$g:(0,\infty)\to \mathbf{R}$$
 be a differentiable function such that  $\int \left(\frac{x(\cos x - \sin x)}{e^x + 1} + \frac{g(x)(e^x + 1 - xe^x)}{(e^x + 1)^2}\right) dx = \frac{xg(x)}{e^x + 1} + C$ , for all  $x > 0$ , where  $C$  is an arbitrary constant.

mathongo // matho (1) g is decreasing in  $\left(0, \frac{\pi}{4}\right)$ 

(3) g' is increasing in  $\left(0, \frac{\pi}{4}\right)$