SELF ASSESSMENT TEST -3

CLASS 10+2

log function exponential form

1.Diff. x^{x} w.r.t.x

2. Diff. $(\cos x)^{x}+x^{\cos x}$ w.r.t.x

3.If y = $\sqrt{\tan x+\sqrt{\tan x+\sqrt{\tan x.....\infty}}}$ prove $\frac{dy}{dx}=\frac{\sec^{2}x}{2y-1}$

4. If $x^{y}+y^{x}=5$ find $\frac{dy}{dx}$

5.If $x^{5}y^{4}=(x+y)^{9}$ prove that $\frac{dy}{dx}=\frac{y}{x}$

6.Find $\frac{dy}{dx}$ when $xy=e^{x-y}$

7.If $(\sin x)^{y}=(\cos y)^{x}$ find $\frac{dy}{dx}$

8. If y = $(\sin x)^{(\sin x)^{(\sin x).....\infty}}$ prove $\frac{dy}{dx}=\frac{y^{2}\cot x}{1-y\log\sin x}$

9. Diff. $\sqrt{\frac{(x-1)(x-2)}{(x-3)(x-4)(x-5)}}$ w.r.t.x

10. If $x=e^{\frac{x}{y}}$ prove that $\frac{dy}{dx}=\frac{x-y}{x\log x}$

11.Diff. $\sin^{-1}\sqrt{\cos x}$ w.r.t x

12.Diff. $\frac{\sin^{-1}x}{\sqrt{1-x^{2}}}$ w.r.t. x

13.Diff. $\tan^{-1}\left(\frac{\cos x}{1+\sin x}\right)$ w.r.t.x

14. Diff. $\tan^{-1}\left(\frac{\sqrt{1+x^2}+1}{x}\right)$ w.r.t.x

15. Diff. $\tan^{-1}\left(\frac{x}{1+\sqrt{1-x^2}}\right)$ w.r.t.x

16. Diff. $\tan^{-1}\left(\frac{\sqrt{1+x^2}-\sqrt{1-x^2}}{\sqrt{1+x^2}+\sqrt{1-x^2}}\right)$ w.r.t. x

17. If y= $\tan^{-1}\left(\frac{5ax}{a^2-6x^2}\right)$ prove that $\frac{dy}{dx}=\frac{3a}{a^2+9x^2}+\frac{2a}{a^2+4x^2}$

18. Diff. $\sec^{-1}\left(\frac{4x-5}{4x+5}\right)+\sin^{-1}\left(\frac{4x+5}{4x-5}\right)$ w.r.t.x

19. If y= $\sec^{-1}\left(\frac{1+x^2}{1-x^2}\right)+\sin^{-1}\left(\frac{2x}{1+x^2}\right)$ prove $\frac{dy}{dx}=\frac{4}{1+x^2}$

20. Diff. $\sin^{-1}\left(x\sqrt{1-x}-\sqrt{x}\sqrt{1-x^2}\right)$ w.r.t.x

21.Diff. $\tan\left(\sin^{-1}x\right)$ w.r.t x

22.Diff. $\frac{\tan^{-1}x}{1+x^2}$ w.r.t. x

23.Diff. $\sec^{-1}\left(\frac{1}{2x^2-1}\right)$ w.r.t.x

24. Diff. $\tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right)$ w.r.t.x

25. Diff. $\cos^{-1}\left(\sqrt{\frac{1+x}{2}}\right)$ w.r.t.x

26. Diff. $\tan^{-1}\left(\frac{\sqrt{1+x^2}-\sqrt{1-x^2}}{\sqrt{1+x^2}+\sqrt{1-x^2}}\right)$ w.r.t. x

27. If y= $\tan^{-1}\frac{4x}{1+5x^2}+\tan^{-1}\frac{2+3x}{3-2x}$ find $\frac{dy}{dx}$

28. Diff. $\tan^{-1}\frac{4-5x}{4+5x}+\tan^{-1}\frac{4+5x}{4-5x}$ w.r.t.x

29. If y= $\sin^{-1}\frac{x}{\sqrt{1+x^2}}+\cos^{-1}\frac{1}{\sqrt{1+x^2}}$ prove $\frac{dy}{dx}=\frac{2}{1+x^2}$

30. Diff. $\sin^{-1}\left(x^2\sqrt{1-x^2}+x\sqrt{1-x^4}\right)$ w.r.t.x

31.Diff. $e^{\tan^{-1}x^2}$ w.r.t.x

32.Diff. e^x sin4x w.r.t.x

33.Diff. log (x + $\sqrt{x^2+a^2}$) w.r.t.x

34.Diff. $\frac{e^{4x}}{\log 5x}$ w.r.t.x

35.Diff. log sin $\sqrt{x^2+1}$ w.r.t.x

36.Diff. log tan $\left(\frac{\pi}{4}+\frac{x}{2}\right)$ w.r.t.x

37.Find $\frac{dy}{dx}$, xy + $xe^{-y}+ye^x=x^2$

38.If $e^{x+y} = xy$ prove that $\frac{dy}{dx} = \frac{y(1-x)}{x(y-1)}$

39.Diff. $\log_{10} \sin x$ w.r.t.x

40.Find $\frac{dy}{dx}$ by first principle e^{5x}.