CONTINUITY & DIFFERENTIABILITY

1) $\frac{d}{dx}(\sin^{-1}x) = \frac{1}{\sqrt{1-x^2}}$

2) $\frac{d}{dx}(\cos^{-1}x) = \frac{1}{\sqrt{1-x^2}}$

3) $\frac{d}{dx}(\tan^{-1}x) = \frac{1}{1+x^2}$

4) $\frac{d}{dx}(\cot^{-1}x) = \frac{-1}{1+x^2}$

5) $\frac{d}{dx}(\sec^{-1}x) = \frac{1}{x\sqrt{x^2-1}}$

6) $\frac{d}{dx}(\operatorname{cosec}^{-1}x) = \frac{-1}{x\sqrt{x^2-1}}$

7) $\frac{d}{dx}(e^x) = e^x$

8) $\frac{d}{dx}(\log x) = \frac{1}{x}$

9) $(f \pm g)(x) = f(x) \pm g(x)$ is continuous

10) $(f \cdot g)(x) = f(x) \cdot g(x)$ is continuous

11) $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$ (whenever $g(x) \neq 0$) is continuous