INDIAN SCHOOL AL WADI AL KABIR
Dept. of Mathematics 2021 – 2022
Class XII – Work Sheet (Part A)
Continuity and Differentiability

	MULTIPLE CHOICE QUESTIONS
1	If $f(x)=2x$ and $g(x)=\frac{x^2}{2}+1$ then which of the following can be a discontinuous function? (a) $f(x)+g(x)$ (b) $f(x)-g(x)$ (c) $f(x).g(x)$ (d) $\frac{g(x)}{f(x)}$
2	The function $f(x)=\frac{4-x^2}{4x-x^3}$ (a) discontinuous at only one point (b) discontinuous at exactly two points (c) discontinuous at exactly three points (d) none of these
3	The function $f(x) = \cot x$ is discontinuous on the set (a) $\{x = n\pi : n \in Z\}$ (b) $\{x = 2n\pi : n \in Z\}$ (c) $\left\{x=(2n+1)\frac{\pi}{2}; n\in Z\right\}$ (d) $\left\{x=\frac{n\pi}{2}; n\in Z\right\}$
4	If $f(x)=\begin{cases} mx+1 \text{ if } x\le\frac{\pi}{2} \\ \sin x+n, \text{ if } x>\frac{\pi}{2}\end{cases}$, is continuous at $x=\frac{\pi}{2}$ then (a) $m = 1, n = 0$ (b) $m=\frac{n\pi}{2}+1$ (c) $n=\frac{m\pi}{2}$ (d) $m=n=\frac{\pi}{2}$
5	Determine the value of 'k' for which the following function is continuous at $x = 3$: $f(x)=\begin{cases}\frac{(x+3)^2-36}{x-3} & , x\neq 3 \\ k & , x=3\end{cases}$
6	If the function $f(x)=\begin{cases}ax+1, & \text{if } x\le 3\\ bx+3, & \text{if } x>3\end{cases}$ is continuous at $x = 3$, then $a - b =$ ..... .
7	If the function $f(x)=\begin{cases}kx+1, & \text{if } x\le\pi\\ \cos x, & \text{if } x>\pi\end{cases}$ is continuous at $x = \pi$, then $k =$ ..... .
8.	Find k, if $f(x)=\begin{cases}k\sin\frac{\pi}{2}(x+1), & x\le 0\\ \frac{\tan x-\sin x}{x^3}, & x>0\end{cases}$ is continuous at $x = 0$.
9	If the function $f(x)=\begin{cases}k(x^2+2), & \text{if } x\le 0\\ 3x+1, & \text{if } x>0\end{cases}$ is continuous at $x = 0$, then $k =$ ..... .
10.	If $f(x) = x + 1$, find $\frac{d}{dx}(fof)(x)$.