Q.NO.1 ATTEMPT ANY FOUR :   (20)

(i) Examin the contiuity at $x = -1$

$$f(x) = \frac{3 - \sqrt{2x + 7}}{x - 1} \quad for \ x \neq 1$$
$$= -\frac{1}{3} \quad for \ x = 1$$

(ii)Examin the continuity at $x = 0$

$$f(x) = \frac{5^x - 3^x}{4^x - 3^x} \quad x = 0$$
$$= \log\left(\frac{5}{4}\right) \quad x \neq 0$$

(iii) Given function is continuous at $x = 0$

$f(x) = \frac{5^x + 5^{-x} - 2}{x^2}$ $x \neq 0$ find $f(0)$

(iv) $f(x) = \frac{\tan 7x}{2x}$ $for \ x \neq 0$ $= k$ $for \ x = 0$ $is \ continuous \ at \ x = 0 . find \ the \ value \ of \ k$

(v)$f(x) = \frac{1 - sinx}{(\pi - 2x)^2} for \ x \neq \frac{\pi}{2}$, is continuous at $x = \frac{\pi}{2}$ $find \ f(\frac{\pi}{2})$

Q.NO.2 Discuss the continuity of the function   (10)

(i) $f(x) = \frac{a^{2x} - 1}{x}$, x≠0

$= 2\log a , x = 0$ at $x = 0$.

(ii) If $f(x) = \frac{e^{2x} - 1}{ax} \ for \ x < 0$

$= 1 \ for \ x = 0$

$= \frac{\log(1 + 7x)}{bx} \ for \ x > 0.$ at x=0