

SELF ASSESSMENT TEST -9**CLASS 10+1****LIMITS**

1. Evaluate (a) $\lim_{x \rightarrow 1} \frac{x^3 + 3x^2 - 6x + 2}{x^3 + 3x^2 - 3x - 1}$. (b) $\lim_{x \rightarrow 2} \left(\frac{x}{x-2} - \frac{4}{x^2 - 2x} \right)$. (c) $\lim_{x \rightarrow 2} \frac{x^{10} - 1024}{x^5 - 32}$

2. Evaluate (a) $\lim_{x \rightarrow 3} \frac{x-3}{\sqrt{x-2} - \sqrt{4-x}}$. (b) $\lim_{x \rightarrow 1} \left\{ \frac{x-2}{x^2 - x} - \frac{1}{x^3 - 3x^2 + 2x} \right\}$.

3. Evaluate (a) $\lim_{x \rightarrow 2} \frac{x^n - 2^n}{x - 2} = 80$ find n. (b) $\lim_{x \rightarrow a} \frac{(x+2)^{\frac{5}{2}} - (a+2)^{\frac{5}{2}}}{x - a}$.

4. Evaluate (a) $\lim_{x \rightarrow 0} \frac{\cos 8x - \cos 4x}{x^2}$. (b) $\lim_{x \rightarrow 0} \frac{1 - \cos 5x}{x^2}$. (c) $\lim_{x \rightarrow 0} \frac{\sin 6x - \sin 2x}{\sin x}$

5. Evaluate (a) $\lim_{x \rightarrow 0} \frac{1 - \cos 2x + \tan^2 x}{x \sin x}$. (b) $\lim_{x \rightarrow 0} \frac{\sin(3+x) - \sin(3-x)}{x}$.

6. Evaluate (a) $\lim_{x \rightarrow 0} \frac{\sin 4x + 2x}{5x + \tan 6x}$. (b) $\lim_{x \rightarrow 0} \frac{\tan 2x - \sin 2x}{x^3}$. (c) $\lim_{x \rightarrow \frac{\pi}{2}} \frac{\cos x}{\frac{\pi}{2} - x}$

7. Evaluate (a) $\lim_{h \rightarrow 0} \frac{(a+h)^2 \sin(a+h) - a^2 \sin a}{h}$. (b) $\lim_{x \rightarrow \frac{\pi}{4}} \frac{\sin x - \cos x}{x - \frac{\pi}{4}}$

8. Evaluate (a) $\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{\left(\frac{\pi}{2} - x \right)^2}$. (b) $\lim_{x \rightarrow \frac{\pi}{4}} \frac{1 - \tan x}{x - \frac{\pi}{4}}$. (c) $\lim_{x \rightarrow 0} \frac{4^x - 5^x}{x}$. (d) $\lim_{x \rightarrow 0} \frac{4^{2x} - 1}{2^{5x} - 1}$.

9. Evaluate (a) $\lim_{x \rightarrow 0} \frac{10^x - 2^x - 5^x + 1}{x \tan x}$. (b) $\lim_{x \rightarrow 0} \frac{e^x + e^{-x} - 2}{x^2}$. (c) $\lim_{x \rightarrow 0} \frac{\log(5+x) - \log(5-x)}{x}$.