مدونة المناهج السعودية

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الموقع التعليمي لجميع المراحل الدراسية

في المملكة العربية السعودية

Home Work 1

Remember

Continuity at point

> F is continuous iff $\lim_{x \to a} f(x) = f(a)$.

Question 1: Choose the correct answer

1. $f(x) = \begin{cases} \frac{\sin x}{x}, & x \neq 0 \\ 2, & x = 0 \end{cases}$ is continuous at $x = 0$

A) True

B) False

2. $f(x) = \begin{cases} \frac{\sin 3x}{x}, & x \neq 0 \\ 2x + 3, & x = 0 \end{cases}$ is continuous at $x = 0$

(A) True

(B) False

3. The value of that makes $F(x)=\begin{cases}\frac{x^2-k^2}{x-k} & , x\neq k\\ 10k-64 & , x=k\end{cases}$ continuous is $k=$

(A) $-\frac{1}{8}$ (B) 8 (C) $\frac{1}{8}$ D) -8

4. $f(x)=\begin{cases}\frac{x^{10}+x^9-24}{x^2+1} & , x\neq 1\\ -12 & , x=1\end{cases}$ is continuous at $x=1$

(A) True (B) False

5. The function $f(x)=\begin{cases}\sqrt{1-3x} & , x<-1\\ 1+x & , x\geq -1\end{cases}$ is continuous at $x=-1$

(A) True

(B) False.

6. The value of k that makes $F(x)=\begin{cases}\frac{x^2-k^2}{x-k} & x\neq k\\ -8 & x=k\end{cases}$ continuous is $k=$

A) -4

B) 8

C) -4

(D) -8

Question 2: Find the value of a and b that make the given function continuous

1) $$f(x)=\begin{cases}\frac{5\sin x}{x} & \text{if } x<0\\ a & \text{if } x=0\\ b\cos(4x) & \text{if } x>0\end{cases}$$

2) $$f(x)=\begin{cases}\frac{x^2-4}{x-2} & , x\neq 2\\ a & , x=2\end{cases}$$

3) $$f(x)=\begin{cases}3x-1 & x\geq 2\\ ax^2+2 & x<2\end{cases}$$

Question 3: Discuss the continuity of the following function

$$f(x)=\begin{cases}x^3-3 & \text{if } x<1\\ \sqrt{x} & \text{if } x\geq 1\end{cases}$$

$$f(x)=\begin{cases}3x+4 & , x\neq 3\\ 13 & , x=3\end{cases}$$

$g(x)=\sqrt{1-x}$ at $x=-3$

$f(x)=\frac{x}{x-1}$ at $x=1$