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MATHS

BOOKS - PATHFINDER MATHS (BENGALI ENGLISH)

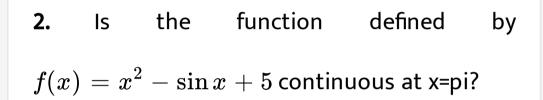
CONTINUITY & DIFFERENTIABILITY

Question Bank

1. If f(x) =|x-2|+1, evaluat
$$Lt_{x\to\,2\,+}\frac{f(x)-f(2)}{x-2}$$
 and $Lt_{x\to\,2\,-}\frac{f(x)-f(2)}{x-2}.$ What can you say

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about the existence of f'(x) at x=2?



3. Discuss the continuity of the function [1-x]+



[x-1] at the point x=1.

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4. If
$$f(x) = \begin{cases} rac{x-5}{|x-5|} & + & a ext{ if } x < 5 \\ a & + & b ext{ if } x = 5 \\ rac{x-5}{|x-5|} & + & b ext{ if } x > 5 \end{cases}$$



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5. Show that the following funtion is continuous

$$|1-x+|x||.$$



6. Find the inverse function of the function f(x)

$$=2^{x(x-1)}(x>0).$$



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7. Examine the continuity of the following

funtion
$$f(x) = \left\{ egin{array}{ll} |x| & ext{if} & x \leq 2 \ [x] & ext{if} & x > 2 \end{array} on[0,2]
ight.$$



8. Given, $f(x) = \frac{x-1}{2x^2 - 7x + 5}$ when `xne1

Find the derivative of f(x) at x=1



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9. Let $f(x) = \frac{1}{x} \sin(x^2)$ when $x \neq 0$

=0 when x=0

Discuss the continuity and differentiability of f(x) at x=0.



10. The funtion $f(x) = \frac{x^3 - 8}{x^2 - 4}$ is undefined at x=2.

Redefine the funtion so as to make it continuous at x=2



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funtion 11. The $f(x) = rac{\log(1+ax) - \log(1-bx)}{x}$ is not define at x=0. Find the value of f(0),so that f(x) is continuous at x=0.



12. Determine the values of a so that the funtion is continuous at x=1.

$$f(x) = x^2 + 4$$
 when $x \leq 2$.

$$=x^2+a^2$$
, when $x<1$.



13. $f(x)=\frac{x^2-1}{x^3-1}$ is undefined at x=1. What should be the value of f(x) at x=1 such that f(x) may be continuous at x=1?

