الاسم: .....

المدرسة: .....

الشعبة: .....

مدرسة خليفة بن زايد العين

الرياضيات – الصف الثاني عشر المتقدم

متعدد شامل الوحدة الثانية

مثال: إذا كانت الإجابة A ، ارسم ◯ إذا أخطأت اشطبها وارسم دائرة حول الإجابة الصحيحة ◯ ⟵

1. What does the table show for the function $f(x) = \sin x$?

A. The slope of the tangent at (0,0) from left.

B. The slope of the tangent at (0,0) from right.

C. The length of the curve at (0,0).

D. The limit of the function from left.

x	$\frac{\sin x}{x}$
-0.1	0.9983341665
-0.01	0.9999833334
-0.001	0.9999998333

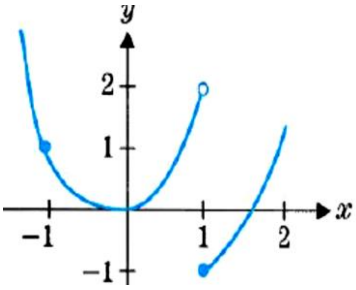
2. Use the graph to find $\lim_{x\to 1^+} f(x)$

A. -2

B. $+2$

C. -1

D. $+1$



3. Find $\lim_{x\to 2\pi} \frac{\sin x}{x}$.

A. 1

B. -1

C. 0

D. 2π

4. Find $\lim_{x\to -1^-} \frac{x+1}{|x+1|}$

A. 1

B. -1

C. 0

D. -2

5.	What is the value of $\lim_{x\to 1^-} \frac{x-1}{\lvert -x+1\rvert}$? A. 1 B. -1 C. 0 D. -2
6.	Find the value of b , such that $\lim_{x\to 0} \begin{Bmatrix} 2x+b^2 & x\le 0 \\ x^2+2b-1 & x>0 \end{Bmatrix}$ exists. A. 2 B. -2 C. 1 D. 3
7.	The value of $\lim_{x\to -2} \frac{ax^2-4a}{x+2}$ is A. $-4a$ B. $4a$ C. -4 D. 4
8.	The value of $\lim_{x\to 0} \frac{\sin kx}{x}$ is A. $-k$ B. $+k$ C. $\frac{-1}{k}$ D. $\frac{1}{k}$
9.	Find the value of $\lim_{x\to 0} \frac{x^2+3x}{\sin x}$ A. 1 B. -1 C. 0 D. 3

10.	Find the value of $\lim_{x\to a}\frac{x^2-a^2}{x-a}$ A. $2a$ B. a C. $-a$ D. $-2a$
11.	Find the value of $\lim_{x\to 2}\frac{x^3-8}{x-2}$ A. -2 *B.* 12 C. 8 D. 4
12.	Find the value of $\lim_{x\to e}\frac{\ln x}{x}$ A. $\ln e$ *B.* e C. $\frac{1}{e}$ D. 0
13.	Find the value of $\lim_{x\to 0} e^{\frac{-1}{x^2}}$ A. 1 B. -1 *C.* 0 *D.* e

14.	Find the value of $\lim_{x\to a} \frac{x}{\ln e^{x^2}}$ where $a \neq 0$ A. 1 B. $\frac{1}{a}$ C. 0 D. $\frac{-1}{a}$
15.	Find the value of $\lim_{x\to 0} \frac{\tan^{-1} x}{x}$ A. 1 B. -1 C. 0 D. Does not exist
16.	Find the value of $\lim_{x\to 2} \cos \frac{2}{x-2}$ A. 2 B. -2 C. Does not exist D. -1
17.	Find the value of $\lim_{x\to 4} \frac{\sqrt{x}-2}{x-4}$ A. $\frac{1}{2}$ B. $\frac{-1}{4}$ C. $\frac{1}{4}$ D. 0
18.	Find the value of $\lim_{x\to 0} \cos^{-1} x^4$ A. $\frac{\pi}{2}$ B. $-\frac{\pi}{2}$ C. 0 D. 1

19.	Find the value of $\lim_{x\to 0} 3x^3(\csc x)^3$ A. 3 B. -3 C. 1 D. -1
20.	Find the value of $\lim_{x\to 0} \frac{1-e^x}{e^{2x}-1}$ A. 1 B. -1 C. $\frac{1}{2}$ D. $\frac{-1}{2}$
21.	Find the value of $\lim_{x\to 2} \frac{\sqrt{x+7}-3}{x-2}$ A. 7 B. -3 C. -2 D. $\frac{1}{6}$
22.	Find the value of $\lim_{x\to 1} \frac{\sqrt[3]{x}-1}{x-1}$ A. 1 B. 3 C. $\frac{1}{3}$ D. $\frac{-1}{3}$
23.	Find the value of $\lim_{x\to 0} \frac{xe^{-2x}\,.\,e}{x^2+x}$ A. e B. -2 C. $-e$ D. $\frac{1}{e}$

24.	Find the value of $\lim_{x\to 1^-}\left[\frac{2}{x-1}+\frac{2}{\lvert x-1\rvert}\right]$ A. 2 B. -2 C. 0 D. غير موجودة
25.	Find the value of $\lim_{x\to 3}\left[\frac{1}{x-3}-\frac{6}{x^2-9}\right]$ A. 1 B. 6 C. $\frac{1}{6}$ D. غير موجودة
26.	**If** $f(x)=\begin{cases}2x+3 & x\le -1\\ 5 & -1<x<1\\ 2x+3 & x>1\end{cases}$, Find $\lim_{x\to 1} f(x)$ A. 1 B. 3 C. 5 D. *Does not exist.*
27.	Find the value of $\lim_{h\to 0}\frac{(-2+h)^3+8}{h}$ A. -2 B. 12 C. 8 D. 4
28.	Find the value of $\lim_{x\to 3}\frac{\sin(x^2-9)}{x^2-9}$ A. -9 B. 3 C. 1 D. $\frac{1}{3}$

29.	Find the value of $\lim_{x\to 0} x^2\sin(\frac{1}{x})$ A. 0 B. 1 C. -1 D. *Does not exist.*
30.	$If \quad -5 \le f(x) \le 5 \quad , \ then\ find\ the\ limit \quad \lim_{x\to 0} x^2 f(x)$ A. 0 B. 5 C. -5 D. *Does not exist.*
31.	Find the value of $\lim_{x\to 0^+} \frac{\sqrt{1-(\cos x)^2}}{x}$ A. 0 B. 1 C. -1 D. *Does not exist.*
32.	Find the value of $\lim_{x\to 0} \frac{1-(\cos x)^4}{x^2}$ A. 2 B. 1 C. -2 D. 0
33.	Let $\lim_{x\to a} f(x) = 3 \quad and \quad \lim_{x\to a} g(x) = -2 \quad ,then\ find\ the\ limit:$ $\lim_{x\to a} \frac{[f(x)]^2 - g(x)}{\sqrt{[g(x)]^2}} =$ A. 7 B. -2 C. -3 D. $\frac{11}{2}$

34.	Find the value of $\lim_{x \to 1.75^+} [\![4x]\!]$ *A.* *1* *B.* *7* *C* *5* *D.* *4*
35.	One of the following **<u>is not</u>** of the conditions of continuity of a function D. The function is defined at that point. B. The limit of the function exists at that point. C. The value of the function is equal to the limit at that point. *D. The function is a polynomial of degree n.*
36.	Let $f(x) = \begin{cases} \frac{3x+3}{x+1} & x \neq -1 \\ a & x = -1 \end{cases}$, What the value of ***a*** that makes the function continuous? A. 1 B. -1 *C.* 3 *D.* -3
37.	*Find the intervals of continuity of the function* $f(x) = \sqrt{1-x}$. A. $(1, \infty)$ B. $(-1, \infty)$ C. $(-\infty, 1]$ D. $(-\infty, -1]$

38.	Determine where f is continuous, for $f(x) = \frac{1}{\sqrt{\ln X}}$ A. $(1, \infty)$ B. $(0, \infty)$ C. $]0,1]$ D. $(0, \infty)$
39.	The function of tax is given as , $T(x) = \begin{cases} 5\%x & 0 < x \leq 5000 \\ 15\%x - a & 5000 \leq x \leq 15000 \end{cases}$ *Find the value of a which makes the function continuous.* A. 150 B. 500 C. 15 D. 10%
40.	Let $f(x) = \sqrt{16 - x^2}$ and $f(c) = w = 2\sqrt{3}$, where $c \in [0,4]$. Find the value of c <u>by using the intermediate theorem</u> A. ± 2 B. 2 C. -2 D. ± 4
41.	If the function $f(x) = x^5 + 4x^2 - 9x + 3$ has a zero in the interval (0,1). and $f(0) = 3$, $f(1) = -1, f(0.5) < 0$, <u>then after bisecting</u>, which interval contains that zero. A. $(1,0)$ B. $(0,0.5)$ C. $(0.5,1)$ D. $(-1,0)$

42. Find the values of a and b such that f(x) is continuous

$$f(x)=\begin{cases} ae^{x}+1 & , \quad x<0 \\ \sin^{-1}\frac{x}{2} & , \quad 0\le x\le 2 \\ x^{2}-x+b & , \quad x>2 \end{cases}$$

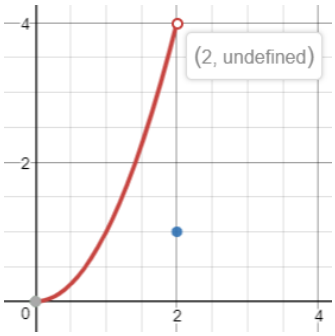
A. $a=-1$ و $b=\frac{\pi}{2}+2$

B. $a=-1$ و $b=\frac{\pi}{2}-2$

C. $a=+1$ و $b=-2$

D. $a=+1$ و $b=+2$

43. What is the interval of continuity in the graph?



A. $(0,2)$

B. $[0,2]$

C. $(0,2]$

D. $[0,2)$

44. For the function $f(x)=\begin{cases} 2x^{2}+3 & x\le -1 \\ 5 & -1<x\le 1 \\ 2x-3 & x>1 \end{cases}$, f(x) is

A. continuous at x=-1 and discontinuous at x = 1

B. continuous at x=1 and discontinuous at x = -1

C. continuous at x=-1 and discontinuous at x = 5

D . continuous at x=-1 and discontinuous at x = 3

45. Determine where f is continuous, for $f(x)=\cos^{-1}(x-2)$

A. $[-1,1]$

B. $[-2,2]$

C. $[1,3]$

D. $[-1,3]$

46. If $\lim_{x\to a} f(x)=\pm\infty$ for some real number a , then

A. $x=a$ is a vertical asymptote.

B. $x=a$ is a slant asymptote.

C. $y=a$ is a horizontal asymptote.

D. $y=a$ is a slant asymptote.

47.	If $\lim_{x\to\pm\infty} f(x) = a$ where a is a real value A. $x = a$ vertical asymptote B. $x = a$ slant asymptote C. $y = a$ horizontal asymptote D. $y = a$ slant asymptote
48.	Find the limit $\lim_{x\to 0} \ln(1 - cosx)$ A. 0 B. ∞ C. $-\infty$ D. $Does\ not\ exist.$
49.	Evaluate $\lim_{x\to -2} \frac{x+1}{(x-3)(x+2)}$ A. $\frac{1}{5}$ B. 0 C. ∞ D. $Does\ not\ exist.$
50.	Which of the following is an asymptote of the function $f(x) = \frac{1}{x-3}$? A. $x = 3$ B. $x = -1$ C. $y = 3$ D. $y = -1$
51.	Determine the asymptotes of function $f(x) = \tan^{-1} x$. A. $x = \pm\frac{\pi}{2}$ B. $x = \pm 1$ C. $y = \pm\frac{\pi}{2}$ D. $y = \pm 1$

52.	Which of the following is an asymptote of the function $f(x) = \frac{3x^3-1}{8-x^3}$? A. $x = \frac{3}{8}$ B. $x = -8$ C. $y = -3$ D. $y = \frac{-1}{8}$
53.	The function $f(x) = \frac{x-1}{1-x^2}$ has a hole at: A. $x = 1$ B. $x = -1$ C. $x = \pm 1$ D. Non of the last.
54.	What is the oblique (slant) asymptote of the function $f(x) = \frac{2x^2-1}{x-2}$? A. $y = 2x - 4$ C. $y = x - 2$ B. $y = 2x + 4$ D. $y = x - 1$
55.	Which of the following is an asymptote of the function $f(x) = \frac{x^3-x^2-7}{1-x^7}$? A. $x = 0$ B. $x = -1$ C. $y = -1$ D. $y = 0$
56	Which of the following is an asymptote of the function $f(x) = e^{\left(\frac{1}{x-1}\right)}$? A. $x = -1$ B. $x = 0$ C. $y = -1$ D. $y = 1$

57.	Suppose that the size of the **pupil (بؤبؤ العين)** of a certain animal is given by $f(x)$ (mm), where x is the intensity of the light on the pupil. Where, $f(x) = \frac{80x^{-0.3}+60}{2x^{-0.3}+5}$. find the size of the pupil with an infinite amount of light. A. 40 B. 12 C. 30 D. 16
58.	$$\lim_{x\to -1}(x^2-2x-3)^{\frac{-2}{3}}$$ A. $-\infty$ B. 0 C ∞ D. $\pm\infty$
59.	Find $\lim_{x\to\frac{\pi}{2}}(x\sec^2 x)$ A. $-\infty$ B. 0 C. ∞ D. $\pm\infty$
60.	Find the asymptotes of the function $f(x) = \frac{-X}{\sqrt{x^2+4}}$ A. $x = \pm 4$ C. $y = \pm 4$ B. $x = \pm 2$ D. $y = \pm 1$
61.	Determine the asymptotes of the function $f(x) = \frac{x}{\sqrt{-x^2+4}}$ A. $x = \pm 4$ B. $x = \pm 2$ C. $y = \pm 4$ D. $y = \pm 1$

62.	Which of the following is an asymptote of the function $f(x) = \sec^{-1}(\frac{x^3+1}{x^2+1})$? A. $x = -\frac{\pi}{2}$ B. $x = \frac{\pi}{2}$ C. $y = -\frac{\pi}{2}$ D. $y = \frac{\pi}{2}$
63.	Determine the asymptotes of the function $f(x) = 4\tan^{-1}(x) - 1$. A. $x = \pm 4(\frac{\pi}{2}) - 1$ B. $x = \pm 4 - 1$ C. $y = \pm 4(\frac{\pi}{2}) - 1$ D. $y = \pm 4 - 1$
64.	Which of the following is an asymptote of the function $f(x) = \frac{\ln(2+e^{2x})}{\ln(1+e^{x})}$? A. $x = 0$ B. $x = -1$ C. $y = 0$ D. $y = 2$
65.	Find the limit $\lim_{x\to\infty}(\sqrt{4x^2 - 2x + 1} - 2x)$ *(Hint, multiply by the conjugate).* A. 0.5 B. -0.5 C. 1.5 D. 1
66.	If $\lim_{x\to\infty} f(x) = a$ and $\lim_{x\to\infty} g(x) = \infty$, *then find* $\lim_{x\to\infty} \frac{f(x)}{g(x)} = \cdots$ A. a C. $-a$ B. 0 D. ∞

1	A	16	C	31	B	46	A	61	D
2	C	17	C	32	A	47	C	62	D
3	C	18	A	33	D	48	B	63	C
4	B	19	A	34	B	49	D	64	B
5	B	20	D	35	D	50	A	65	B
6	C	21	D	36	C	51	C	66	B
7	A	22	C	37	C	52	C		
8	B	23	A	38	A	53	B		
9	D	24	C	39	B	54	B		
10	A	25	C	40	B	55	D		
11	B	26	C	41	B	56	D		
12	C	27	B	42	B	57	B		
13	C	28	C	43	D	58	C		
14	B	29	A	44	A	59	C		
15	A	30	A	45	C	60	D		