

Mathematics ECAT Pre Engineering Chapter 17 Functions and Limits Online Test

Sr	Questions	Answers Choice
1	The behavior of trigonometric function is called	A. Continuity B. Discontinuity C. Periodicity D. Smoothness
2	The trigonometric function are continuous whenever	A. They are defined B. their limit exist C. Their period is given D. All are incorrect
3	The domain and range of a trigonometric function can be allocate by their	A. graph B. Continuity C. Discontinuity D. Periods
4	If $f(x)$ is defined and continuous then $f(x)$ is always	A. Rational function B. Trigonometric function C. Logarithmic function D. All are correct
5	The domain of $y = \cos^{-1} x$ is	A. $-\infty < x < \infty$ B. $-1 \leq x \leq 1$ C. $x \leq -1$ or $x \geq 1$ D. None of these
6	Point (2,0) lies on trigonometric function $f(x) = \underline{\hspace{1cm}}$;	A. $\sin x$ B. $\cos x$ C. $\tan x$ D. $\sec x$
7	$f(x) = x $ is a/an	A. Injective function B. Bijective function C. Surjective function D. Implicit function
8	The function $f: X \rightarrow Y$ defined as $f(x) = \alpha \forall x \in X, \alpha \in Y$ is called	A. Constant function B. Polynomial function C. Identity function D. Linear function
9	The range of $y = x^2 + 1$ is the set of non-negative real numbers except	A. $0 \leq y < 1$ B. $0 < y < 1$ C. $0 \leq y \leq 1$ D. $0 < y \leq 1$
10	$x = \sec \theta, y = \tan \theta$ are the parametric equations of	A. Circle B. Hyperbola C. Ellipse D. parabola
11	Composition of functions is	A. Non-commutative ($fg \neq gf$) B. non-associative $[f(g(h)) \neq (f(g))h]$ C. Commutative ($fg = gf$) D. $f \circ f^{-1} \neq 1$
12	If a tangent line touches the function $y = f(x)$ in more than one point then $y = f(x)$ is	A. Periodic B. Surjective C. Bijective D. Injective
13	An even function is symmetric about the line	A. $y = x$ B. $x = 0$ C. $y = -x$ D. $y = 0$
14	The range of the function $f: X \rightarrow Y$ is defined by	A. $\{x y = f(x) \forall x \in X \wedge y \in Y\}$ B. $\{(x,y) y = f(x) \forall x \in X\}$ C. $\{y y = f(x) \forall x \in X \wedge y \in Y\}$ D. Y
15	The only function which is both even and odd is	A. $f(x) = \alpha$ B. $f(x) = x$ C. $f(x) = 0$ D. Both A & B

16	The curve $f(x,y) = 0$ has a central symmetry if	A. $f(-x,-y)=f(x,y)$ B. $f(x,-y)=f(x,y)$ C. $f(-x,y)=f(x,y)$ D. $f(-x,-y)\neq f(x,y)$
17	The function discontinuous at $x = 0$ is (I) $\tan x$ (II) $\cot x$ (III) $\sec x$ (iv) $\operatorname{cosec} x$	A. I & III B. I & IV C. II & IV D. II & III
18	Domain of $\cosh x$ is	A. \mathbb{R} B. $\mathbb{R} - \{0\}$ C. $[1, \infty)$ D. $[0, \infty)$
19	The function $f(x) = x $ is a/an _____ function	A. Even B. Odd C. Both even as well as odd D. Neither even nor odd
20	If $f(x) = 2x+1$ then $f \circ f(x) =$ _____;	A. $4x+3$ B. $2x+3$ C. $4x+1$ D. None of these
21	The set of points $\{(x,y) y = f(x), \forall x \in \mathbb{R}\}$ is called	A. Relation B. Graph of f C. Function D. All are correct
22	If $f(a) = b^2$ and $g(c) = d$ where $c = b^2$ then $(g \circ f)(a)$ is	A. a B. c C. b D. d
23	Inverse of the function $y = 10^x$ is	A. $y = \log x$ B. $y = \ln x$ C. $x = 10y$ D. $x = 10y$
24	The range of function $f(x) = -x^2 + 2x - 1$ is	A. \mathbb{R} B. $(-\infty, 0]$ C. $(-\infty, 1]$ D. $[0, \infty)$
25	A rule that assigns to each elements x in X a unique element y in Y is called a _____	A. domain B. range C. function D. none of these
26	A rule or correspondence that assigns to each element x in X a unique element y in Y is called a function from	A. X to X B. X to Y C. Y to X D. none of these
27	A function from X to Y is written as	B. $f : X \rightarrow Y$ D. $f : Y \rightarrow Y$
28	A function from X to X is denoted as	B. $f : X \rightarrow Y$ D. $f : Y \rightarrow Y$
29		A. $x = f(y)$ B. $y = f(x)$ C. $x = f(x)$ D. $y = f(y)$
30		A. range of f B. domain of f C. both (a) and (b) D. none of these
31		A. images B. pre-images C. constants D. none of these
32		A. image B. pre-image C. constant D. none of these
33	If y is an image of x under the function f , then we write	A. $y = f(x)$ B. $x = f(y)$ C. $y = x$ D. none of these
34		A. $f(x) = x^2$ B. $f(x^2) = x$

34	Question Image	<p>A. x^2</p> <p>B. x^3</p> <p>C. $f(x) = x$</p> <p>D. none of these</p>
35	If $f(x) = x^2$ then $f(0)$ is	<p>A. 0</p> <p>B. 1</p> <p>C. 2</p> <p>D. none of these</p>
36	If $f(x) = x^2$ then $f(0)$ is	<p>A. 0</p> <p>B. 1</p> <p>C. 2</p> <p>D. none of these</p>
37	If $f(x) = x^2$ then $f(-2)$ is	<p>A. -2</p> <p>B. 2</p> <p>C. 4</p> <p>D. -4</p>
38	If $f(x) = x^2$ then $f(2)$ is	<p>A. -2</p> <p>B. 2</p> <p>C. 4</p> <p>D. -4</p>
39	If $f(x) = (-x)^2$ then $f(-2)$ is	<p>A. 0</p> <p>B. 2</p> <p>C. -4</p> <p>D. 4</p>
40	If $f(x) = -x^2$ then $f(-2)$ is	<p>A. -2</p> <p>B. 2</p> <p>C. -4</p> <p>D. 4</p>
41	If $f(x) = x^3$ then $f(-2)$ is	<p>A. -2</p> <p>B. -4</p> <p>C. -8</p> <p>D. 8</p>
42	If $f(x) = -x^3$ then $f(-2)$ is	<p>A. -2</p> <p>B. -4</p> <p>C. -8</p> <p>D. 8</p>
43	If $f(x) = x^2 - x$ then $f(0)$ is	<p>A. 0</p> <p>B. 1</p> <p>C. 2</p> <p>D. 3</p>
44	If $f(x) = x^2 - x$ then $f(1)$ is	<p>A. 0</p> <p>B. 1</p> <p>C. 2</p> <p>D. 3</p>
45	If $f(x) = x^2 - x$ then $f(2)$ is	<p>A. 4</p> <p>B. 6</p> <p>C. 2</p> <p>D. 0</p>
46	If $f(x) = x^2 - x$ then $f(-2)$ is	<p>A. 4</p> <p>B. 6</p> <p>C. 2</p> <p>D. 0</p>
47	Question Image	<p>A. 2</p> <p>C. -2</p> <p>D. none of these</p>
48	Question Image	<p>A. 2</p> <p>B. 6</p>
49	Question Image	<p>A. 2</p> <p>D. 0</p>
50	Question Image	<p>A. 0</p> <p>B. -4</p> <p>D. none of these</p>
51	Question Image	<p>A. 2</p> <p>B. -1</p> <p>C. 8</p> <p>D. not defined</p>
52	Question Image	<p>A. 0</p> <p>B. 3</p> <p>C. 9</p> <p>D. -3</p>

53	If $f(x) = x^3 - 2x^2 + 4x - 1$ then $f(0)$ is	B. 1 C. -1 D. none of these
54	Question Image	A. -1 B. 1 C. 2 D. -2
55	If $f(x) = x^3 - 2x^2 + 4x - 1$ then $f(2)$ is	A. 7 B. -16 C. 16 D. -9
56	If $f(x) = \cos x$ then $f(0)$ is	A. 0 B. 1 C. 1/2
57	Question Image	A. 0 B. 1 C. 1/2
58	If $f(x) = \tan x$ then $f(0)$ is	A. 0 B. 1 C. 1/2
59	Question Image	A. 0 B. 1 C. 1/2
60	Question Image	A. 0 B. 1 C. 2
61	Question Image	A. 0 B. 1 C. 2 D. 1/2
62	If $f(x) = x + 1$ then $f(z^2 - 1)$ is	A. $z^{\sup>2\sup>}$ B. $z^{\sup>2\sup>} + 2$ C. $z^{\sup>2\sup>} - 2$ D. none of these
63	If $y=f(x)$ is a function then x is called	A. dependent variable B. independent variable C. constant D. none of these
64	If $y=f(x)$ is a function then y is called	A. dependent variable B. independent variable C. constant D. none of these
65	$f(x) = 2x^2 + 3x + 5$ is a	A. trigonometric function B. algebraic function C. exponential function D. logarithmic function
66	$f(x) = \sin x + \cos^2 x$ is	A. trigonometric function B. algebraic function C. exponential function D. logarithmic function
67	$f(x) = \log x + 3$ is a	A. trigonometric function B. algebraic function C. exponential function D. logarithmic function
68	$f(x) = 2^x + 3 \cdot 2^{2x} + 5$ is	A. trigonometric function B. algebraic function C. exponential function D. logarithmic function
69	$f(x) = C$ is	A. identity function B. constant function C. linear function D. quadratic function
70	Question Image	A. quadratic function B. constant function C. linear function D. exponential function
71	Question Image	A. quadratic function B. constant function C. trigonometric function D. linear function

72	$f(x) = x$ is	A. trigonometric function B. exponential function C. quadratic function D. identify function
73	$f(x) = 1$ is	A. identity function B. constant function C. linear function D. quadratic function
74	In common logarithm the base is	A. 1 B. 0 C. 10 D. e
75	In natural logarithm the base is	A. 1 B. 0 C. 10 D. e
76	$f(x) = ax + b$ will be a constant function if	A. $a = 1, b = 1$ B. $a = 1, b = 0$
77	$f(x) = ax + b$ will be an identity function if	A. $a = 1, b = 1$ B. $a = 1, b = 0$
78	$\sinh x =$ _____	
79	$\tanh x =$ _____	
80	$\operatorname{sech} x =$ _____	
81	Question Image	A. $\sinh x$ B. $\cosh x$ C. $\tanh x$ D. $\coth x$
82	Question Image	A. $\sinh x$ B. $\cosh x$ C. $\tanh x$ D. $\coth x$
83	Question Image	A. $\sinh x$ B. $\cosh x$ C. $\operatorname{sech} x$ D. $\operatorname{cosech} x$
84	$\sinh^{-1} x =$ _____	
85	Question Image	
86	Question Image	
87	Question Image	
88	Question Image	
89	Question Image	
90	Question Image	A. 0 B. 1 C. -1 D. none of these
91	Question Image	
92	Question Image	
93	Question Image	
94	Question Image	
95	Question Image	
96	Question Image	
97	Question Image	
98	Question Image	
99	Question Image	
100	Question Image	

101	Question Image	
102	Question Image	A. 0 B. 1 D. none of these
103	Question Image	A. 0 B. 1 D. -1
104	Question Image	A. 0 B. 1 C. -1 D. none of these
105	Question Image	A. 0 B. 1 D. -1
106	Question Image	
107	Question Image	
108	Question Image	A. $[0, 1[$ B. $[0, 1]$ C. $]0, 1[$ D. None of these
109	Question Image	A. 2 B. 4 C. 8 D. 12
110	Question Image	A. One-to-one and onto B. One-to-one but not on to C. Onto but not one-to-one D. Neither one-to-one nor onto
111	Question Image	A. $\frac{\pi}{2}$ B. π C. 2π D. None of these
112	The period $\sin^2 \theta$ is	A. $\frac{\pi}{2}$ B. π C. 2π D. π
113	The period of the function $f(x) = \sin^4 x + \cos^4 x$ is	A. $\frac{\pi}{2}$ B. π C. 2π D. None of these
114	The periods of the function $f(x) = x[x]$ is	A. 1 B. 2 C. Non periodic D. None of these
115	π is the period of the function	A. $ \sin x + \sin x $ B. $\sin^4 x + \cos^4 x$ C. $\sin(\sin x) + \sin(\cos x)$ D. None of these
116	Which of the following function form 1 to itself are bi-jective	A. $F(x) = x + 3$ B. $F(x) = x^5$ C. $F(x) = 3x + 2$ D. $F(x) = x^2 + x$

117	Question Image	
118	Question Image	<p>A. One-one but not onto</p> <p>B. One-one and onto</p> <p>C. Onto but not one-one</p> <p>D. Neither one-one nor onto</p>
119	Question Image	<p>A. -2</p> <p>B. -1</p> <p>C. 1</p> <p>D. 2</p>
120	If $f(x) = x^3 - 2x^2 + 4x - 1$, then $f(-2) = ?$	<p>A. 0</p> <p>B. -25</p> <p>C. 5</p> <p>D. 45</p>
121	Question Image	<p>A. 0</p> <p>B. -2</p> <p>C. 1</p> <p>D. 4</p>
122	$p(x) = 2x^4 - 3x^3 + 2x - 1$ is polynomial of degree	<p>A. 1</p> <p>B. 2</p> <p>C. 3</p> <p>D. 4</p>
123	Which is not included in the domain of $\cos^{-1}x$	<p>A. 0</p> <p>B. 1</p> <p>C. -1</p> <p>D. 2</p>
124	Which is an explicit function	<p>A. $y = x^2 + 2x - 1$</p> <p>B. $x^2 + xy + y^2 = 2$</p> <p>C. $x^2 + y^2 = xy + 2$</p> <p>D. All are</p>
125	Question Image	
126	The domain of $f(x) = \log x$ is	<p>A. $[0, \infty)$</p> <p>B. $(0, \infty)$</p> <p>C. $[0, \infty)$</p> <p>D. $[-\infty, \infty)$</p>
127	A function $F(x)$ is called even if	<p>A. $F(x) = F(-x)$</p> <p>B. $F(x) = F(-x)$</p> <p>C. $F(x) = -F(x)$</p> <p>D. $2F(x) = 0$</p>
128	The range of inequality $x + 2 > 4$ is	<p>A. $(-1, 2)$</p> <p>B. $(-2, 2)$</p> <p>C. $(1, \infty)$</p> <p>D. None</p>
129	Question Image	<p>A. 1</p> <p>B. 0</p> <p>C. -2</p>

D. 3

130	Graph of the question $x^2 + y^2 = 4$ is	<div>A. A circle</div> <div>B. An ellipse</div> <div>C. A parabola</div> <div>D. A square</div>
131	Domain of $y = \sec x$ is	<div>A. All real numbers except $\pi/2 + n\pi$</div> <div>B. R</div> <div>C. All negative integers</div> <div>D. None of these</div>
132	The area of circle of unit radius =	<div>A. 0</div> <div>B. 1</div> <div>C. 4</div> <div>D. π</div>
133	Question Image	<div>A. 0</div> <div>B. 1</div> <div>C. 8</div> <div>D. ∞</div>
134	Question Image	<div>A. $3/4$</div> <div>B. r</div> <div>C. v</div> <div>D. None of these</div>
135	Question Image	<div>A. Does not exist because f is unbounded</div> <div>B. Is not attained even though f is bounded</div> <div>C. Is equal to 1</div> <div>D. Is equal to -1</div>
136	Question Image	<div>A. $R/[0,4]$</div> <div>B. $R/(0,4)$</div> <div>C. $(0,4)$</div> <div>D. $[0,4]$</div>
137	Question Image	<div>A. $(1, 7/3)$</div> <div>B. $(1, 7/5)$</div> <div>C. $(1, 11/7)$</div> <div>D. $(1, 3/5)$</div>
138	Question Image	<div>A. $1/8$</div> <div>B. $1/2$</div> <div>C. $1/4$</div> <div>D. $1/6$</div>
139	Question Image	<div>A. 2</div> <div>B. 1</div> <div>C. 5</div> <div>D. 0</div>
140	if the value of the sphere, $v = 4/3\pi r^2$, then the which of the following statement is true?	<div>A. r is the function of v</div> <div>B. v is the function of r</div> <div>C. π is independent variable</div> <div>D. None of these</div>
141	A function from A to B is denoted by	<div>A. $f: A \rightarrow B$</div> <div>B. $f: B \rightarrow A$</div> <div>C. $f: \rightarrow A : B$</div> <div>D. $f \rightarrow A \rightarrow B$</div>
142	If a variable y depends on a variable x in such a way that each value of x determines exactly one value of y , then we say that	<div>A. x is function of y</div> <div>B. y is a function of x</div> <div>C. y is independent variable</div> <div>D. x is real valued function</div>
143	The domain of $y = \sqrt{x^2 - 9}$ is	<div>A. R</div> <div>B. $(0, +\infty)$</div> <div>C. $(-\infty, -3) \cup (3, +\infty)$</div> <div>D. $(0, \infty)$</div>
144	In the function $f: A \rightarrow B$, the elements of A are called	<div>A. Images</div> <div>B. Pre-images</div> <div>C. ranges</div> <div>D. Parameters</div>

A. R

145	The domain the function : $f(x) = x^2$ is given by	<p>B. Set of all non-negative Real numbers</p> <p>C. $\mathbb{R}^{<\sup>-1</sup>}$</p> <p>D. None of these</p>
146	The domain of the function $x/x^2 - 4$ is given by	<p>A. \mathbb{R}</p> <p>B. $\mathbb{R} + 2$</p> <p>C. $[\mathbb{R} - (<u>+</u>2)]$</p> <p>D. $\mathbb{R} - 4$</p>
147	If the domain of the function $f: x \mapsto 2x^3 + 1$ is $\{-1, 2, 3\}$, the range of the function is	<p>A. $\{3, 2, 5\}$</p> <p>B. $\{1, 3, 9\}$</p> <p>C. $\{-1, -2, -3\}$</p> <p>D. $\{3, 9, 19\}$</p>
148	_____ invented a symbolic way to write the statement "y is a function of x" as $y = f(x)$	<p>A. Leibniz</p> <p>B. Newton</p> <p>C. Euler</p> <p>D. None of these</p>
149	Every relation, which can be represented by a linear equation in two variables, represents a	<p>A. Relation</p> <p>B. Cartesian product</p> <p>C. Function</p> <p>D. Graph</p>
150	The value of x which is unchanged by the mapping in the function defined by $f: x \mapsto x^2 + 5x - 5$ for $x > 0$ is	<p>A. 1</p> <p>B. 5</p> <p>C. -5</p> <p>D. -1</p>
151	If x is an image of y under the function f. This can be written as	<p>A. $y = f(x)$</p> <p>B. $f(x) = 0$</p> <p>C. $x = f(y)$</p> <p>D. $f(y) = 0$</p>
152	What is range of the function $g(x) = x - 3 $?	<p>A. $[0, \infty)$</p> <p>B. $(0, \infty)$</p> <p>C. $(-\infty, 3]$</p> <p>D. $[0, \infty)$</p>
153	The largest possible domain of the function: $y = \sqrt{x}$ is:	<p>A. $(0, \infty)$</p> <p>B. 12</p> <p>C. $(3, 12)$</p> <p>D. $(3, \infty)$</p>
154	For $f(x) = x^2 + px + 1$, if $f(3) = 3$ then $P =$	<p>A. $3/7$</p> <p>B. $-2/5$</p> <p>C. $-7/5$</p> <p>D. $-7/3$</p>
155	For $f(x) = x^2$, what is the value of $f(a) + f(-a)$ in terms of a?	<p>A. $3a^2$</p> <p>B. $2a^2$</p> <p>C. $2a$</p> <p>D. $-7a$</p>
156	If the function $y = 2x - 3$, what is the preimage of 11?	<p>A. 11</p> <p>B. 7</p> <p>C. 5</p> <p>D. 2</p>
157	if $f(x) = x^3 - 3x^2 + 5x - 1$, then $f(-\sqrt{2}) =$	<p>A. $7 + 7\sqrt{2}$</p> <p>B. $3 + 3\sqrt{2}$</p> <p>C. $-7 - 7\sqrt{2}$</p> <p>D. $-3 - 3\sqrt{2}$</p>
158	Express the perimeter P of square as a function of its area A?	<p>A. $P = 4\sqrt{A}$</p> <p>B. $P = \sqrt{A}$</p> <p>C. $P = 2A$</p> <p>D. $P = \pi\sqrt{A}$</p>
159	A function in which the variable appears as exponent is called:	<p>A. An identity function</p> <p>B. A logarithmic function</p> <p>C. an exponential function</p> <p>D. A rational function</p>
160	A function of the form $p(x)/Q(x)$ is called:	<p>A. Rational function</p> <p>B. Logarithmic function</p> <p>C. Exponential function</p> <p>D. Hyperbolic function</p>
161	$xy = 2$ is:	<p>A. a constant function</p> <p>B. an identity function</p> <p>C. an improper function</p> <p>D. implicit function</p>
162	A function f is said to be an even if $f(-x) =$	<p>A. 0</p> <p>B. 1</p> <p>C. $f(x)$</p> <p>D. $-f(x)$</p>

163	$f(x) = \sin x$ is:	A. an odd function B. an even function C. an implicit function D. an exponential function
164	$f(x) = x^3$ is:	A. an odd function B. an even function C. an implicit function D. a quadratic function
165	$\cos^2 x + \sin^2 x$	A. an even function B. an odd function C. an even and implicit function D. neither even nor a odd
166	$f(x) = x^3 - x/x^2 + 1$ is :	A. an even function B. an odd function C. an even and implicit function D. neither even nor a odd
167	$f(x) = 3x^4 - 2x^2 + 7$ is:	A. an even function B. an odd function C. an even and implicit function D. neither even nor a odd
168	$f(x) = 3x/x^2 + 1$ is:	A. an even function B. an odd function C. an even and implicit function D. neither even nor a odd