BRITISH COLUMBIA CALCULUS 12 (MCALC12) · UNIT A · 25 QUESTIONS

Functions, Graphs and Limits — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **The domain of $f(x) = \sqrt{x - 3}$ is**

- **A** $x \geq 3$
- **B** $x > 3$
- **C** $x \leq 3$
- **D** $x \geq -3$

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2 **The range of $f(x) = x^2 + 4$ is**

A $y \leq 4$

B all real numbers

C $y \geq 4$

D $y > 4$

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3 **If f(x) = 2x - 1 and g(x) = x + 3, then f(g(2)) is**



A 7

B 9

C 11

D 5

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4 **The inverse of f(x) = 4x + 3 is**

- **A** $f^{-1}(x) = \frac{x + 3}{4}$
- **B** $f^{-1}(x) = \frac{x}{4} + 3$
- **C** $f^{-1}(x) = 4x - 3$
- **D** $f^{-1}(x) = \frac{x - 3}{4}$

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5 **The function $f(x) = x^3 - 2x$ is**

- **A** even
- **B** odd
- **C** neither even nor odd
- **D** both even and odd

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6 $\lim_{x \to 1} (2x^2 - 3x + 5)$ is

ANSWER

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7 $\lim_{x \to 4} x^2 - 16/x - 4$ is

ANSWER

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8 **The graph shows a function with a jump at x = 1. The left-hand limit at x = 1 is**

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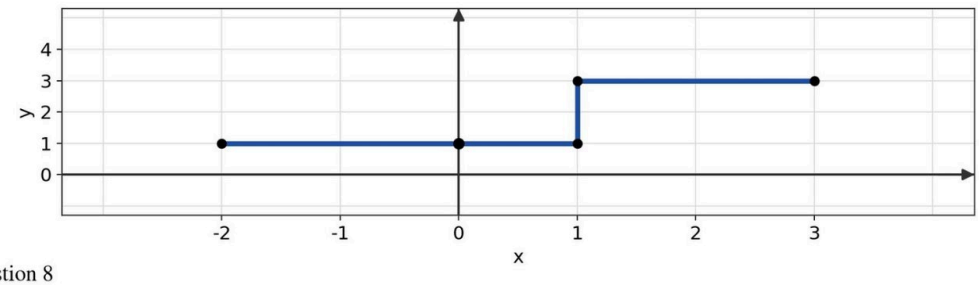

Question 8

The graph shows a function with a jump at $x = 1$. The left – hand limit at $x = 1$ is

A) 1

B) 3

C) 2

D) does not exist

A 1

B 3

C 2

D does not exist

A 1

B 3

C 2

D does not exist

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9 $\lim_{x \to \infty} \frac{5x^2 - 2}{2x^2 + 7}$ is



A $\frac{5}{7}$

B $\frac{5}{2}$

C 5

D 0

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10 $\lim_{x \to \infty} \frac{4x - 1}{x^2 + 3}$ is

A 4

B 1

C ∞

D 0

Understand It with Pulse | Flag a mistake

11 $\lim_{x \to \infty} \frac{x^3 + 2}{2x^2 - 1}$ is

A ∞

B 0

C $\frac{1}{2}$

D 2

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12 **The function $f(x) = \frac{x^2 - 9}{x - 3}$ for $x \neq 3$ and $f(3) = a$ is continuous at $x = 3$ when a equals**

A 3

B 0

C 9

D 6

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13 **The discontinuity of $f(x) = \frac{x^2 - 4}{x - 2}$ at $x = 2$ is**

A removable

B jump

C infinite

D none

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14 The vertical asymptote of $f(x) = \frac{x + 1}{x - 2}$ is



A x = -1

B x = 1

C x = -2

D x = 2

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15 The horizontal asymptote of $f(x) = \frac{3x + 2}{x - 5}$ is

A $y = 5$

B $y = 3$

C $y = -5$

D $y = \frac{2}{5}$

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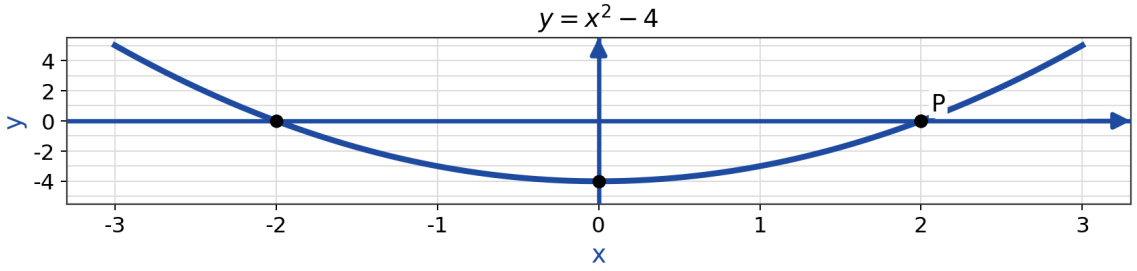
16 The graph shows $f(x) = x^2 - 4$. The value of $f(2)$ is



A 0

B 4

C -4

D 2

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17 $\lim_{x \to 3^-} \frac{|x-3|}{x-3}$ is

A 1

B 0

C -1

D does not exist

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18 $\lim_{x \to 0} \frac{\sin 2x}{x}$ is



A 1

B 0

C 2

D $\frac{1}{2}$

Understand It with Pulse | Flag a mistake

19 $\lim_{x \to 9} \frac{\sqrt{x} - 3}{x - 9}$ is

A $\frac{1}{3}$

B $\frac{1}{9}$

C 3

D $\frac{1}{6}$

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20 **A function f is continuous at x = a if**



A $\lim_{x \to a} f(x) = f(a)$

B $\lim_{x \to a}$ f(x) exists, but need not equal f(a)

C f(a) is defined, but the limit need not exist

D the left and right limits differ

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21 As $x \to \infty$, the value of $-x^4 + 3x$ approaches

- **A** ∞
- **B** 0
- **C** $-\infty$
- **D** 3

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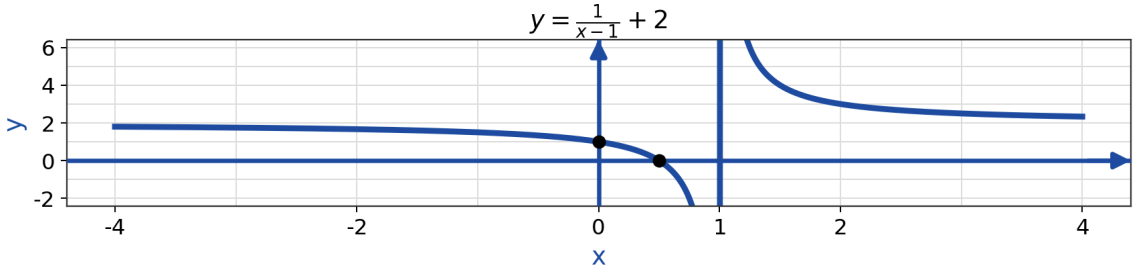
22 The graph shows $f(x) = \dfrac{1}{x - 1} + 2$. Its horizontal asymptote is



- **A** y = 1
- **B** y = -1
- **C** y = 2
- **D** y = 0

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23 The domain of $f(x) = \frac{x}{x^2 - 4}$ excludes

- **A** x = 0 only
- **B** x = 2 only
- **C** x = -2 only
- **D** x = 2 and x = -2

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24 $\lim_{x \to \infty} \frac{\sqrt{4x^2 + 1}}{x}$ is

- **A** 4
- **B** 1
- **C** 2
- **D** 0

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25 **The piecewise function f(x) = x + 1 for x < 2 and f(x) = kx for x ≥ 2 is continuous at x = 2 when k equals**

A 2

B 1

C $\frac{3}{2}$

D 3

Understand It with Pulse | Flag a mistake

ANSWER KEY

1.	A	**10.**	D	**19.**	D
2.	C	**11.**	A	**20.**	A
3.	B	**12.**	D	**21.**	C
4.	D	**13.**	A	**22.**	C
5.	B	**14.**	D	**23.**	D
6.	4	**15.**	B	**24.**	C
7.	8	**16.**	A	**25.**	C
8.	A	**17.**	C		
9.	B	**18.**	C		

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