The Horizontal Asymptote(s) of $f(x) = \frac{2x^2 \tan^{-1} x}{x^2+1}$ is (are):

A) $y = 2$

B) $y = -\frac{\pi}{2}$

C) $y = \pm\frac{\pi}{2}$

D) $y = \frac{\pi}{2}$

E) $y = \pm\pi$

Select one:

A)

B)

C)

The function $f(x) = (\sin x)\, e^{-\sqrt{3}\,x}$, $0 < x < 2\pi$, has a horizontal tangent line at $x =$

(A) $x = \frac{2\pi}{3}, \frac{5\pi}{3}$

(B) $x = \frac{5\pi}{6}, \frac{7\pi}{6}$

(C) $x = \frac{5\pi}{6}, \frac{11\pi}{6}$

(D) $x = \frac{\pi}{6}, \frac{7\pi}{6}$

(E) $x = \frac{\pi}{3}, \frac{4\pi}{3}$

Select one:

A)

B)

C)

D)

E)

If $f(x) = \frac{ax^2 - x + b}{x^2 + x}$ has no vertical asymptotes, then

(A) $a = b = 0$.

(B) $a = b = 1$.

(C) $a = -1$ and $b = 0$.

(D) $a = -1$ and $b = 1$.

(E) $a = 0$ and $b = -1$.

elect one:

A)

B)

C)

Question 5

Not yet answered

Marked out of 4

Flag question

Let $f(x) = \begin{cases} (cx-3)^3 & if \quad x < 2 \\ c^2x^2 - 9 & if \quad x \geq 2 \end{cases}$, where $c > 2$.

If $f(x)$ is continuous at $x = 2$, then $c =$

Answer:

The function $f(x) = \frac{x-2}{x^3-4x}$ has a vertical asymptote at $x =$

A) $-2, 0$

B) -2

C) 0

D) 2

E) $-2, 0, 2$

Question 2

Not yet answered

Marked out of 4

Flag question

If a and b are real numbers such that $\lim_{x \to 0} \frac{\sqrt{ax+b}-2}{x} = 1$.
Then $a + b =$

Answer:

The horizontal asymptote(s) of $f(x) = \frac{\sqrt{x^2-6x}}{3x}$ is (are)

A) $x = \frac{1}{3}$ and $x = -\frac{1}{3}$.

B) $y = \frac{1}{3}$ and $y = -\frac{1}{3}$.

C) $x = -2$ and $x = 2$.

D) $y = \frac{1}{3}$ only.

E) $y = -2$ and $y = 2$.

Select one

- A)
- B) (selected)
- C)
- D)

Which of the following statements is (always) correct?

A) If f is continuous at $x = -1$, then f is differentiable at $x = -1$.

B) If f is continuous on $[a, b]$ and $f(a)f(b) < 0$, then $f(c) = 0$ for some $c \in (a, b)$.

C) If $f(-1) = 5$, then $f'(-1) = 0$.

D) If f is continuous on (a, b), then f has an absolute minimum value $f(c)$ where $c \in (a, b)$.

E) $f(x) = (x + 1)^{2/3}$ is differentiable on $\mathbb{R}$.

Select one:

- ○ A)
- ◉ B)
- ○ C)

Question **8**

Not yet answered

Marked out of 1

Flag question

Let $4x \leq g(x) + 3x \leq x^4 - x^2 + 4$ for all x. Then $\lim_{x \to 1} g(x) =$

Answer:

سؤال 12

لم يتم الاجابة عليه بعد

الدرجة من 1

علم هذا السؤال

Let $2x \le g(x) - 3x \le x^4 - x^2 + 2$ for all x. Then $\lim_{x \to 1} g(x) =$

Answer:

Let $4x \leq g(x) + 3x \leq x^4 - x^2 + 4$ for all x. Then $\lim_{x \to 1} g(x) =$

Answer:

Given $0 \leq \int_{e^{-5}}^{e^{5}} \sqrt{\frac{25-(\ln x)^2}{x^2}}\, dx \leq m$. The minimum value of $m =$.

Answer:

$$\text{Let } f(x) = \begin{cases} \frac{3+\cos x}{4^x} & \text{if} \quad x < 0 \\ (2-x)^2 & \text{if} \quad 0 < x < 1 \\ 4 + e^x \ln x & \text{if} \quad x > 1 \\ 10 & \text{if} \quad x = 0 \ \text{ or } x = 1 \end{cases}.$$

Then f has removable discontinuity at

Answer:

Given $a > 1$, then $\lim\limits_{x \to a^-} \frac{1}{\ln\left(\frac{x}{a}\right)} - \frac{1}{x-a} =$

A) $-\infty$

B) $+\infty$

C) 0

D) $\frac{1}{a}$

E) None of the above

Select one:

Given $b > 0, b \neq 1$, then $\lim_{x \to \frac{\pi}{4}} \frac{b^{\tan x} - b}{x - \frac{\pi}{4}} =$

A) $-\infty$

B) $+\infty$

C) $b \ln b$

D) $2 \ln b$

E) $2b \ln b$

$$\text{Let } f(x) = \begin{cases} \dfrac{\cos 3x}{4^x} & \text{if} \quad x < 0 \\ (1+x)^2 & \text{if} \quad 0 < x < 1 \\ 7 + e^x \ln x & \text{if} \quad x > 1 \\ 10 & \text{if} \quad x = 0 \ \text{ or } x = 1 \end{cases}.$$

Then f has jump discontinuity at

Answer:

Given $a > 1$, then $\lim_{x \to a^+} \frac{1}{\ln\left(\frac{x}{a}\right)} - \frac{1}{x-a} =$

A) $-\infty$

B) $+\infty$

C) 0

D) $\frac{1}{a}$

E) None of the above

Select one:

- A)
- B)
- C)
- D)
- E)

The horizontal asymptote(s) of $f(x) = \frac{7e^{x}+2e^{-x}}{4e^{x}-e^{-x}}$ is (are)

A) $y = \frac{7}{4}$ only.

B) $x = \frac{7}{4}$ and $x = -2$.

C) $y = \frac{7}{4}$ and $y = -2$.

D) $y = \frac{1}{2}$ and $y = -7$.

E) $x = \frac{1}{2}$ and $x = -7$.

Select one:

- A)
- B)
- C)
- D)
- E)

Let $f(x) = \begin{cases} (cx-3)^3 & if \quad x < 2 \\ c^2x^2 - 9 & if \quad x \geq 2 \end{cases}$, where $c > 2$.

If $f(x)$ is continuous at $x = 2$, then $c =$

Answer:

$$\lim_{x \to -2^+} \frac{\sqrt{9x^2+36x+36}}{x+2} =$$

Answer:

The function $f(x) = \dfrac{\log(81 - x^4) + \tan^{-1}(2^x - 3)}{x - 7}$ is continuous on:

A) $(-3, 3)$.

B) $[-3, 3]$.

C) $(-\infty, -3) \cup (3, 7) \cup (7, \infty)$.

D) $(-\infty, -3] \cup [3, 7) \cup (7, \infty)$.

E) None of the above.

Select one:

- A)
- B)
- C)
- D)
- E)

The values of a that make $\lim_{x\to a^-} \sqrt{x^2 - 5x + 6}$ Does Not Exists are:

A) $[2, 3]$

B) $(2, 3]$

C) $[2, 3)$

D) $(2, 3)$

E) $(-\infty, \infty)$

Select one:

- ○ A)
- ○ B)
- ○ C)
- ◉ D)
- ○ E)

Clear my choice

The function $f(x) = \frac{x-2}{x^3-4x}$ has a vertical asymptote at $x =$

A) $-2, 0$

B) -2

C) 0

D) 2

E) $-2, 0, 2$

Select one:

- ○ A)
- ○ B)
- ○ C)
- ● D)
- ○ E)

Clear my choice

The solution of $\ln(200x^4) - 2\ln x^3 = \ln 2$ is $x =$

Answer:

The function $f(x) = \frac{\log(81-x^4)+\tan^{-1}(2^x-7)}{x-5}$ is continuous on:

A) $[-3,3]$.
B) $(-3,3)$.
C) $(-\infty,-3] \cup [3,5) \cup (5,\infty)$.
D) $(-\infty,-3) \cup (3,5) \cup (5,\infty)$.
E) None of the above.

Select one:

- ○ A)
- ◉ B)
- ○ C)
- ○ D)
- ○ E)

The solution of $\ln(54x^3) - 2\ln x^3 = \ln 2$ is $x =$

Answer:

The function $f(x) = \frac{x+1}{x^3-x}$ has a vertical asymptote at $x =$

.

A) 1

B) -1

C) 0

D) $-1, 0, 1$

E) $0, 1$

Let $f(x) = \begin{cases} \frac{3+\cos x}{4^x} & \text{if } x < 0 \\ (2-x)^2 & \text{if } 0 < x < 1 \\ 4+e^x \ln x & \text{if } x > 1 \\ 10 & \text{if } x = 0 \text{ or } x = 1 \end{cases}$.

Then f has removable discontinuity at

Given a function with $f(-3) = 7$ and $f'(-3) = 15$, what is

$$\lim_{h \to 0} \frac{5h}{f(h-3)-7}?$$

A) $\frac{1}{3}$

B) 15

C) $\frac{5}{3}$

D) 0

E) 3

The function $f(x) = \frac{x+1}{x^3-x}$ has a vertical asymptote at $x =$

A) 1

B) -1

C) 0

D) $-1, 0, 1$

E) $0, 1$

The function $f(x) = \frac{x+1}{x^3-x}$ has a vertical asymptote at $x =$

.

A) 1

B) -1

C) 0

D) $-1, 0, 1$

E) $0, 1$

The graph of $y = e^{-x} + 1$ has a horizontal asymptote with equation:

A) $x = 0$

B) $y = 0$

C) $x = 1$

D) $y = 1$

E) The graph has no horizontal asymptotes

Let $2x \leq g(x) - 3x \leq x^4 - x^2 + 2$ for all x. Then $\lim_{x \to 1} g(x) =$

If f is a polynomial such that $\lim_{x \to 5} \frac{f(x)-a}{x-5} = 8$ and $\lim_{x \to 5} \frac{x^2-ax+b}{f(x)-a} = 1$.

Then $b + 23 =$

The solution of $\ln(54x^3) - 2\ln x^3 = \ln 2$ is $x =$

Answer:

Given a function with $f(-3) = 7$ and $f'(-3) = \frac{5}{3}$, what is

$$\lim_{h \to 0} \frac{5h}{f(h-3)-7}?$$

A) $\frac{1}{3}$

B) 15

C) $\frac{5}{3}$

D) 0

E) 3

Suppose that $f(0) = -2, f'(0) = 2, g(0) = 2$, and $g'(0) = -2$.

If $h(x) = \frac{2e^x + g(x)}{f(x)\cos x}$, then $h'(0) =$

A) 1

B) -1

C) 2

D) -2

E) None of the above

The graph of $y = e^{-x} + 1$ has a horizontal asymptote with equation:

A) $x = 0$

B) $y = 0$

C) $x = 1$

D) $y = 1$

E) The graph has no horizontal asymptotes

The function $f(x) = \frac{x+2}{x^3-4x}$ has a vertical asymptote at $x =$

.

A) $-2, 0, 2$

B) $0, 2$

C) 0

D) -2

E) 2

The graph of $y = e^{-x} + 1$ has a horizontal asymptote with equation:

A) $x = 0$
B) $y = 0$
C) $x = 1$
D) $y = 1$
E) The graph has no horizontal asymptotes

The function $f(x) = \frac{\log(16-x^4)+\tan^{-1}(2^x-5)}{x-3}$ is continuous on:

A) $(-2, 2)$.

B) $[-2, 2]$.

C) $(-\infty, -2) \cup (2, 3) \cup (3, \infty)$.

D) $(-\infty, -2] \cup [2, 3) \cup (3, \infty)$.

E) None of the above.

The solution of $\ln(64x^4) - 2\ln x^3 = \ln 4$ is $x =$

Answer: 4

We get the graph of $y = 3 + 2^{x+1}$ by shifting the graph of $y = 2^x$

A) 1 unit left and 3 units up.

B) 1 unit left and 3 units down.

C) 1 unit right and 3 units down.

D) 1 unit right and 3 units up.

E) 3 units left and 1 unit up.

If f is a polynomial such that $\lim_{x \to 5} \frac{f(x)-a}{x-5} = 8$ and $\lim_{x \to 5} \frac{x^2-ax+b}{f(x)-a} = 1$.

Then $b + 23 =$

Answer:

$$\lim_{x\to -1^{+}} \frac{\sqrt{16x^2+32x+16}}{x+1} =$$

If f is a polynomial such that $\lim_{x\to5}\frac{f(x)-a}{x-5}=8$ and $\lim_{x\to5}\frac{x^2-ax+b}{f(x)-a}=1$.

Then $b+53=$

The function $f(x) = \frac{\log(81-x^4)+\tan^{-1}(2^x-3)}{x-7}$ is continuous on:

A) $(-3,3)$.

B) $[-3,3]$.

C) $(-\infty,-3) \cup (3,7) \cup (7,\infty)$.

D) $(-\infty,-3] \cup [3,7) \cup (7,\infty)$.

E) None of the above.

If f is a polynomial such that $\lim_{x \to 5} \frac{f(x)-a}{x-5} = 8$ and $\lim_{x \to 5} \frac{x^2-ax+b}{f(x)-a} = 1$.

Then $b + 33 =$

The solution of $\ln(54x^3) - 2\ln x^3 = \ln 2$ is $x =$

Answer: 3

$$\lim_{x\to -1^+} \frac{\sqrt{16x^2+32x+16}}{x+1} =$$

Answer:

$$\sec\left(\cos^{-1}\frac{1}{6}\right) =$$

The values of a that make $\lim_{x \to a^+} \sqrt{x^2 - 5x + 6}$ Does Not Exists are:

A) $[2, 3]$

B) $(2, 3]$

C) $[2, 3)$

D) $(2, 3)$

E) $(-\infty, \infty)$

The solution of $\ln(64x^4) - 2\ln x^3 = \ln 4$ is $x =$

Answer:

The function $f(x) = \dfrac{\log(16 - x^4) + \tan^{-1}(2^x - 7)}{x - 5}$ is continuous on:

A) $[-2, 2]$.

B) $(-2, 2)$.

C) $(-\infty, -2] \cup [2, 5) \cup (5, \infty)$.

D) $(-\infty, -2) \cup (2, 5) \cup (5, \infty)$.

E) None of the above.

The values of a that make $\lim_{x \to a^{+}} \sqrt{x^2 - 5x + 6}$ Does Not Exists are:

A) $[2, 3]$

B) $(2, 3]$

C) $[2, 3)$

D) $(2, 3)$

E) $(-\infty, \infty)$

The function $f(x) = \frac{x-1}{x^3-x}$ has a vertical asymptote at $x =$

.

A) 1

B) -1

C) 0

D) $-1, 0$

E) $-1, 0, 1$

If f is a polynomial such that $\lim_{x\to5}\frac{f(x)-a}{x-5}=8$ and $\lim_{x\to5}\frac{x^2-ax+b}{f(x)-a}=1$. Then $b+23=$

Answer: 11

$$\lim_{x\to-2^+}\frac{\sqrt{4x^2+16x+16}}{x+2}=$$

Answer: 4

Given $f(x)=\frac{3}{1+x}$ and $g(x)=\frac{4}{x+2}$. The domain of $(f o g)(x)$ is:

A) $(-\infty,\infty)-\{-1\}$.

B) $(-\infty,\infty)-\{-2\}$.

C) $(-\infty,\infty)-\{-6\}$.

The graph of $y = e^{-x} + 1$ has a horizontal asymptote with equation:

A) $x = 0$
B) $y = 0$
C) $x = 1$
D) $y = 1$
E) The graph has no horizontal asymptotes

The function $f(x) = \frac{\log(81 - x^4) + \tan^{-1}(2^x - 3)}{x - 7}$ is continuous on:

A) $(-3, 3)$.

B) $[-3, 3]$.

C) $(-\infty, -3) \cup (3, 7) \cup (7, \infty)$.

D) $(-\infty, -3] \cup [3, 7) \cup (7, \infty)$.

E) None of the above.