Question 1

Not yet answered

Marked out of 20

Determine the domains of the functions.

$f(x) = \sqrt{1-x}$ is defined on $(-\infty, \boxed{a}]$.

$\boxed{a}$:

$f(x) = \frac{1}{x^2-4}$ is defined on $(-\infty, \boxed{b}) \cup (\boxed{c}, \boxed{d}) \cup (\boxed{e}, \infty)$.

$\boxed{b}$: $\boxed{c}$: $\boxed{d}$: $\boxed{e}$:

$f(x) = \log(1-x^2)$ is defined on $(\boxed{f}, \boxed{g})$.

$\boxed{f}$: $\boxed{g}$:

Question 2

Not yet answered

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Calculate $\lim_{x\to 2} \frac{x^2+\sqrt{x+\sqrt{2x}}}{5x} = \frac{\boxed{a}}{\boxed{b}}$.

$\boxed{a}$: $\boxed{b}$:

Calculate $\lim_{x\to\infty} \frac{2x^3+2x+4}{3x^3-5x^2+x} = \frac{\boxed{c}}{\boxed{d}}$.

$\boxed{c}$: $\boxed{d}$:

Question 3

Not yet answered

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Compute $\lim_{x\to 0} \frac{\sqrt{1-x}-\sqrt{1+x}}{x} = \boxed{a}$.

$\boxed{a}$:

Hint: use $\sqrt{a}-\sqrt{b} = \frac{(\sqrt{a}-\sqrt{b})(\sqrt{a}+\sqrt{b})}{(\sqrt{a}+\sqrt{b})}$.

Question 4

Not yet answered

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Calculate $\lim_{x\to 1} \frac{x^2-1}{x^3-1} = \frac{\boxed{a}}{\boxed{b}}$.

$\boxed{a}$: $\boxed{b}$:

If we define $f(x) = \frac{x^2-1}{x^3-1}$ for $x \neq 1$ and $\frac{\boxed{c}}{\boxed{d}}$ for $x = 1$, $f(x)$ is continuous on $\mathbb{R}$.

$\boxed{c}$: $\boxed{d}$:

Question 5

Not yet answered

Marked out of 20

Calculate $(\frac{3}{2})^4 = \frac{\boxed{a}}{\boxed{b}}$, $9^{-\frac{5}{2}} = \frac{\boxed{c}}{\boxed{d}}$, $\log_2 \sqrt{128} = \frac{\boxed{e}}{\boxed{f}}$, $\log_{\frac{1}{2}} \frac{1}{8} = \boxed{g}$

$\boxed{a}$: $\boxed{b}$: $\boxed{c}$: $\boxed{d}$: $\boxed{e}$: $\boxed{f}$: $\boxed{g}$:

Question 6

Not yet answered

Marked out of 20

Calculate $\sin\frac{13\pi}{3} = \frac{\sqrt{\boxed{a}}}{\boxed{b}}$, $\cos(-\frac{3\pi}{4}) = \frac{\boxed{c}}{\sqrt{\boxed{d}}}$, $\sin\frac{\pi}{8} = \frac{\sqrt{\boxed{e}-\sqrt{\boxed{f}}}}{\boxed{g}}$.

$\boxed{a}$: $\boxed{b}$: $\boxed{c}$: $\boxed{d}$: $\boxed{e}$: $\boxed{f}$: $\boxed{g}$:

Question 7

Not yet answered

Marked out of 20

Calculate

$\lim_{n\to\infty}\frac{2^n+1}{3^n} = \boxed{a}$, $\lim_{n\to\infty}\frac{\sqrt{4^n+3}}{2^n} = \boxed{b}$, $\lim_{n\to\infty}(1+2^n)^{\frac{1}{n}} = \boxed{c}$, $\lim_{n\to\infty}(1+\frac{1}{2^n})^n = \boxed{d}$

.

$\boxed{a}$: $\boxed{b}$: $\boxed{c}$: $\boxed{c}$:

Hint: Compare with a simpler limit and use squeezing.

Question 8

Not yet answered

Marked out of 20

Calculate $\lim_{x\to 0}\frac{x}{\sin(2x)} = \frac{\boxed{a}}{\boxed{b}}$, $\lim_{x\to 0}\frac{\log(x+1)}{\sin(x)} = \boxed{c}\lim_{x\to\infty} x(e^{\frac{1}{x}}-1) = \boxed{d}$.

$\boxed{a}$: $\boxed{b}$: $\boxed{c}$: $\boxed{d}$:

Question 9

Not yet answered

Marked out of 20

Let $f(x) = x^2 - 4x + 5$ defined on $[0, 5]$. f takes the minumum at $x = \boxed{a}$, and its value $f(\boxed{a}) = \boxed{b}$. f takes the maximum at $x = \boxed{c}$, and its value $f(\boxed{c}) = \boxed{d}$.

$\boxed{a}$: $\boxed{b}$: $\boxed{c}$: $\boxed{d}$:

Question 10

Not yet answered

Marked out of 20

Let $f(x) = \sin(x^2)$, $g(x) = e^{-x^2}$, $h(x) = \log(x^2+1)$ on $(-\infty, \infty)$.

Choose the one which takes both maximum and minumum, and calculate these values.

Maximum: Minimum:

Choose all functions that are not bounded.

- ☐ f
- ☐ g
- ☐ h