Question 1

Not yet answered

Marked out of 10

If not specified otherwise, fill in the blanks with **integers (possibly 0 or negative)**. A fraction should be **reduced** (for example, $\frac{1}{2}$ is accepted but not $\frac{2}{4}$), and if it is negative and the answer boxes (such as $\frac{\boxed{\text{a}}}{\boxed{\text{b}}}$) have ambiguity, the negative sign should be put on the numerator (for example $\frac{-1}{2}$ is accepted but $\frac{1}{-2}$ is not). $\log x = \log_e x$, not $\log_{10} x$. $\exp x = e^x$.

Calculate the series $\sum_{k=1}^{\infty} \frac{5}{3^k} = \frac{\boxed{\text{a}}}{\boxed{\text{b}}}$.

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

Question 2

Not yet answered

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If not specified otherwise, fill in the blanks with **integers (possibly 0 or negative)**. A fraction should be **reduced** (for example, $\frac{1}{2}$ is accepted but not $\frac{2}{4}$), and if it is negative and the answer boxes (such as $\frac{\boxed{\text{a}}}{\boxed{\text{b}}}$) have ambiguity, the negative sign should be put on the numerator (for example $\frac{-1}{2}$ is accepted but $\frac{1}{-2}$ is not). $\log x = \log_e x$, not $\log_{10} x$.

The series $\sum_{k=1}^{\infty} \left(\frac{x}{3}\right)^k$ converges for $\boxed{\text{a}} < x < \boxed{\text{b}}$.

(Hint: use the root test or the ratio test)

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

Question 3

Not yet answered

Marked out of 5

If not specified otherwise, fill in the blanks with **integers (possibly 0 or negative)**. A fraction should be **reduced** (for example, $\frac{1}{2}$ is accepted but not $\frac{2}{4}$), and if it is negative and the answer boxes (such as $\frac{\boxed{\text{a}}}{\boxed{\text{b}}}$) have ambiguity, the negative sign should be put on the numerator (for example $\frac{-1}{2}$ is accepted but $\frac{1}{-2}$ is not). $\log x = \log_e x$, not $\log_{10} x$.

The series $\sum_{k=1}^{\infty} \frac{1}{k^{x+1}}$ converges for $\boxed{\text{a}} < x$.

(Hint: use the comparison test)

$\boxed{\text{a}}$:

Question 4

Not yet answered

Marked out of 15

If not specified otherwise, fill in the blanks with **integers (possibly 0 or negative)**. A fraction should be **reduced** (for example, $\frac{1}{2}$ is accepted but not $\frac{2}{4}$), and if it is negative and the answer boxes (such as $\frac{\boxed{\text{a}}}{\boxed{\text{b}}}$) have ambiguity, the negative sign should be put on the numerator (for example $\frac{-1}{2}$ is accepted but $\frac{1}{-2}$ is not). $\log x = \log_e x$, not $\log_{10} x$. $\exp x = e^x$.

Calculate $(1+i\sqrt{3})^5 = \boxed{\text{a}} + \boxed{\text{b}}\sqrt{\boxed{\text{c}}}i$.

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

Question 5

Not yet answered

Marked out of 20

If not specified otherwise, fill in the blanks with **integers (possibly 0 or negative)**. A fraction should be **reduced** (for example, $\frac{1}{2}$ is accepted but not $\frac{2}{4}$), and if it is negative and the answer boxes (such as $\frac{\boxed{\text{a}}}{\boxed{\text{b}}}$) have ambiguity, the negative sign should be put on the numerator (for example $\frac{-1}{2}$ is accepted but $\frac{1}{-2}$ is not). $\log x = \log_e x$, not $\log_{10} x$. $\exp x = e^x$.

Calculate $(-\frac{\sqrt{3}}{2} + i\frac{1}{2})^{\frac{1}{5}} = \frac{\sqrt{\boxed{\text{a}}}}{\boxed{\text{b}}} + \frac{\boxed{\text{c}}}{\boxed{\text{d}}}i$, where $\frac{\sqrt{\boxed{\text{a}}}}{\boxed{\text{b}}}, \frac{\boxed{\text{c}}}{\boxed{\text{d}}} > 0$.

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

Question 6

Not yet answered

Marked out of 20

If not specified otherwise, fill in the blanks with **integers (possibly 0 or negative)**. A fraction should be **reduced** (for example, $\frac{1}{2}$ is accepted but not $\frac{2}{4}$), and if it is negative and the answer boxes (such as $\frac{\boxed{\text{a}}}{\boxed{\text{b}}}$) have ambiguity, the negative sign should be put on the numerator (for example $\frac{-1}{2}$ is accepted but $\frac{1}{-2}$ is not). $\log x = \log_e x$, not $\log_{10} x$. $\exp x = e^x$.

Find a general solution of the differential equation $y''(x) + 2y'(x) + 5y(x) = 0$. $y(x) = C_1 e^{\boxed{\text{a}}x}\cos(\boxed{\text{b}}x) + C_2 e^{\boxed{\text{c}}x}\sin(\boxed{\text{d}}x)$.

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

Question 7

Not yet answered

Marked out of 15

If not specified otherwise, fill in the blanks with **integers (possibly 0 or negative)**. A fraction should be **reduced** (for example, $\frac{1}{2}$ is accepted but not $\frac{2}{4}$), and if it is negative and the answer boxes (such as $\frac{\boxed{\text{a}}}{\boxed{\text{b}}}$) have ambiguity, the negative sign should be put on the numerator (for example $\frac{-1}{2}$ is accepted but $\frac{1}{-2}$ is not). $\log x = \log_e x$, not $\log_{10} x$. $\exp x = e^x$.

Find a general solution of the differential equation $y'(x) = xy(x)^2$ and $y(0) = 1$. $y(x) = \boxed{\text{a}}/(x^{\boxed{\text{b}}} + \boxed{\text{c}})$.

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