|  |  |  |
| --- | --- | --- |
| **1.a** | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{ax + 3}}{{\sqrt {{x^2} + 1} - x}}} \right) = - 1\]. Tìm a: |  |
| 2.A | 1 |  |
| 2.B | 4 |  |
| 2.C | 2 |  |
| 2.D | -1 |  |
| 3.Đáp án | C |  |
| 4.Đáp án chi tiết | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{ax + 3}}{{\sqrt {{x^2} + 1} - x}}} \right) = \mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{a + \frac{3}{x}}}{{ - \sqrt {1 + \frac{1}{{{x^2}}}} - 1}}} \right) = \frac{a}{{ - 2}} = - 1 \Rightarrow a = 2\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.b** | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {2x + 1} \right)\sqrt {\frac{{x + 1}}{{b{x^3} - 1}}} = - \frac{2}{{\sqrt 3 }}\]. Tìm b: |  |
| 2.A | \[\frac{4}{3}\] |  |
| 2.B | \[\frac{1}{3}\] |  |
| 2.C | \[\frac{3}{4}\] |  |
| 2.D | 3 |  |
| 3.Đáp án | D |  |
| 4.Đáp án chi tiết | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {2x + 1} \right)\sqrt {\frac{{x + 1}}{{b{x^3} - 1}}} = \mathop {\lim }\limits\_{x \to - \infty } - \sqrt {\frac{{{{\left( {2x + 1} \right)}^2}\left( {x + 1} \right)}}{{b{x^3} - 1}}} = \mathop {\lim }\limits\_{x \to - \infty } - \sqrt {\frac{{{{\left( {2 + \frac{1}{x}} \right)}^2}\left( {1 + \frac{1}{x}} \right)}}{{b - \frac{1}{{{x^3}}}}}} = - \frac{2}{{\sqrt b }} = - \frac{2}{{\sqrt 3 }} \Rightarrow b = 3\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.c** | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{\sqrt {a{x^2} - x} - \sqrt {b{x^2} + 1} }}{{2x + 3}}} \right) = \frac{1}{2}\]TÌm a, b biết b – a = 3 |  |
| 2.A | a = 9, b = 12 |  |
| 2.B | a = 4, b = 7 |  |
| 2.C | a = 2, b = 5 |  |
| 2.D | a = 1, b = 4 |  |
| 3.Đáp án | D |  |
| 4.Đáp án chi tiết | \[\begin{gathered}  \mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{\sqrt {a{x^2} - x} - \sqrt {b{x^2} + 1} }}{{2x + 3}}} \right) = \mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{x\left( { - \sqrt {\frac{{a{x^2} - x}}{{{x^2}}}} + \sqrt {\frac{{b{x^2} + 1}}{{{x^2}}}} } \right)}}{{x\left( {\frac{{2x + 3}}{x}} \right)}}} \right) = \mathop {\lim }\limits\_{x \to - \infty } \frac{{ - \sqrt {a - \frac{1}{x}} + \sqrt {b + \frac{1}{{{x^2}}}} }}{{2 + \frac{3}{x}}} \hfill \\  = \frac{{ - \sqrt a + \sqrt b }}{2} = \frac{1}{2} \Rightarrow - \sqrt a + \sqrt b = 1 \hfill \\  \end{gathered} \]  \[ \Rightarrow \left\{ \begin{gathered}  \sqrt b - \sqrt a = 1 \hfill \\  b - a = 3 \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  \sqrt b - \sqrt a = 1 \hfill \\  \left( {\sqrt b - \sqrt a } \right)\left( {\sqrt b + \sqrt a } \right) = 3 \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  \sqrt b - \sqrt a = 1 \hfill \\  \sqrt b + \sqrt a = 3 \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  b = 4 \hfill \\  a = 1 \hfill \\  \end{gathered} \right.\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.d** | \[\mathop {\lim }\limits\_{x \to + \infty } \left( {\sqrt {a{x^2} - x + 1} - \sqrt {b{x^2} - 3x + 1} } \right) = + \infty \].Tìm a,b |  |
| 2.A | \[a > b\] |  |
| 2.B | \[a \geqslant b\] |  |
| 2.C | \[a < b\] |  |
| 2.D | \[a \leqslant b\] |  |
| 3.Đáp án | A |  |
| 4.Đáp án chi tiết | \[\begin{gathered}  \mathop {\lim }\limits\_{x \to + \infty } \left( {\sqrt {a{x^2} - x + 1} - \sqrt {b{x^2} - 3x + 1} } \right) = \mathop {\lim }\limits\_{x \to + \infty } \left( {\frac{{\left( {a - b} \right){x^2} + 2x}}{{\sqrt {a{x^2} - x + 1} + \sqrt {b{x^2} - 3x + 1} }}} \right) \hfill \\  = \mathop {\lim }\limits\_{x \to + \infty } \left( {\frac{{\left( {a - b} \right) + \frac{2}{x}}}{{\sqrt {\frac{a}{{{x^2}}} - \frac{1}{{{x^3}}} + \frac{1}{{{x^4}}}} + \sqrt {\frac{b}{{{x^2}}} - \frac{3}{{{x^3}}} + \frac{1}{{{x^4}}}} }}} \right) \hfill \\  \end{gathered} \]  Để giới hạn bằng \[ + \infty \Leftrightarrow a - b > 0 \Leftrightarrow a > b\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.e** | \[\mathop {\lim }\limits\_{x \to + \infty } \left( {\frac{{{3^x} - a{{.4}^{x + 1}} + 1}}{{b{{.4}^x} + {2^{x + 1}}}}} \right) = - 2\]với a.b = 2, a < b. Tìm a,b |  |
| 2.A | a = -1, b = -2 |  |
| 2.B | a = 1, b = 2 |  |
| 2.C | a = \[\frac{1}{2}\], b = 4 |  |
| 2.D | a = 2, b = 1 |  |
| 3.Đáp án | B |  |
| 4.Đáp án chi tiết | \[\mathop {\lim }\limits\_{x \to + \infty } \left( {\frac{{{3^x} - a{{.4}^{x + 1}} + 1}}{{b{{.4}^x} + {2^{x + 1}}}}} \right) = \mathop {\lim }\limits\_{x \to + \infty } \left( {\frac{{{{\left( {\frac{3}{4}} \right)}^x} - 4a + \frac{1}{{{4^x}}}}}{{b + 2{{\left( {\frac{2}{4}} \right)}^x}}}} \right) = \frac{{ - 4a}}{b} = - 2 \Rightarrow 2a - b = 0\]  \[\left\{ \begin{gathered}  2a = b \hfill \\  ab = 2 \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  b = 2a \hfill \\  2{a^2} = 2 \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  a = \pm 1 \hfill \\  b = \pm 2 \hfill \\  \end{gathered} \right.\]Kết hợp ĐK: a = 1, b = 2 |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.f** | Tìm a, b biết\[\mathop {\lim }\limits\_{x \to - \infty } \frac{{a{{.2}^x} + b}}{{b{{.2}^x} - 3}} = 1\]và a + b = 2 |  |
| 2.A | a = 0, b = 2 |  |
| 2.B | a = 1, b = 1 |  |
| 2.C | a = 5, b = -3 |  |
| 2.D | a = 2, b = -2 |  |
| 3.Đáp án | C |  |
| 4.Đáp án chi tiết | \[\mathop {\lim }\limits\_{x \to - \infty } \frac{{a{{.2}^x} + b}}{{b{{.2}^x} - 3}} = \frac{{a.0 + b}}{{b.0 - 3}} = \frac{b}{{ - 3}} = 1 \Rightarrow b = - 3 \Rightarrow a = 5\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.g** | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {\sqrt {\frac{{a{x^4} + {x^2} - 3}}{{\left( {b{x^3} + 1} \right)\left( {3x - 1} \right)}}} } \right)\]. TÌm a, b biết a – b = 2 |  |
| 2.A | a = 1, b = -1 |  |
| 2.B | a = 6, b = 4 |  |
| 2.C | a = 4, b = 2 |  |
| 2.D | a = 3, b = 1 |  |
| 3.Đáp án | D |  |
| 4.Đáp án chi tiết | \[\begin{gathered}  \mathop {\lim }\limits\_{x \to - \infty } \left( {\sqrt {\frac{{a{x^4} + {x^2} - 3}}{{\left( {b{x^3} + 1} \right)\left( {3x - 1} \right)}}} } \right) = \mathop {\lim }\limits\_{x \to - \infty } \sqrt {\frac{{{x^4}\left( {a + \frac{1}{{{x^2}}} - \frac{3}{{{x^4}}}} \right)}}{{{x^4}\left( {b + \frac{1}{{{x^3}}}} \right)\left( {3 - \frac{1}{x}} \right)}}} = \mathop {\lim }\limits\_{x \to - \infty } \sqrt {\frac{{\left( {a + \frac{1}{{{x^2}}} - \frac{3}{{{x^4}}}} \right)}}{{\left( {b + \frac{1}{{{x^3}}}} \right)\left( {3 - \frac{1}{x}} \right)}}} \hfill \\  = \sqrt {\frac{a}{{3b}}} = 1 \Rightarrow a - 3b = 0 \hfill \\  \end{gathered} \]\[ \Rightarrow \left\{ \begin{gathered}  a = 3b \hfill \\  a - b = 2 \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  a = 3 \hfill \\  b = 1 \hfill \\  \end{gathered} \right.\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.h** | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{3b{x^2} - 6x + 1}}{{\sqrt {a{x^4} + 1} }}} \right) = 3\]. Tìm a,b |  |
| 2.A | \[{b^2} = a,\,\,a > 0\] |  |
| 2.B | \[b = a\,,\,\,a \geqslant 0\] |  |
| 2.C | \[b = {a^2},\,\,a > 0\] |  |
| 2.D | \[b = - a\,,\,\,a \geqslant 0\] |  |
| 3.Đáp án | A |  |
| 4.Đáp án chi tiết | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{3b{x^2} - 6x + 1}}{{\sqrt {a{x^4} + 1} }}} \right) = \mathop {\lim }\limits\_{x \to - \infty } \frac{{{x^2}\left( {3b - \frac{6}{x} + \frac{1}{{{x^2}}}} \right)}}{{{x^2}\sqrt {a + \frac{1}{{{x^4}}}} }} = \mathop {\lim }\limits\_{x \to - \infty } \frac{{3b - \frac{6}{x} + \frac{1}{{{x^2}}}}}{{\sqrt {a + \frac{1}{{{x^4}}}} }} = \frac{{3b}}{{\sqrt a }} = 3 \Rightarrow {b^2} = a,a > 0\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.i** | Tìm b biết \[{a^3} = b\] và \[\mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{a{x^5} + 3{x^3} - bx + 1}}{{2 + b{x^5}}}} \right) = 1\] |  |
| 2.A | -1 hoặc 1 |  |
| 2.B | 0 hoặc 1 |  |
| 2.C | 0 hoặc -1 |  |
| 2.D | 0 hoặc 1 hoặc -1 |  |
| 3.Đáp án | A |  |
| 4.Đáp án chi tiết | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {\frac{{a{x^5} + 3{x^3} - bx + 1}}{{2 + b{x^5}}}} \right) = \mathop {\lim }\limits\_{x \to - \infty } \frac{{a + \frac{3}{{{x^2}}} - \frac{b}{{{x^4}}} + \frac{1}{{{x^5}}}}}{{\frac{2}{{{x^5}}} + b}} = \frac{a}{b} = 1 \Rightarrow a - b = 0\]  \[ \Rightarrow \left\{ \begin{gathered}  {a^3} = b \hfill \\  a = b \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  {b^3} - b = 0 \hfill \\  a = b \hfill \\  \end{gathered} \right. \Rightarrow \left[ \begin{gathered}  b = 0(L) \hfill \\  b = \pm 1 \hfill \\  \end{gathered} \right.\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.j** | \[\mathop {\lim }\limits\_{x \to - \infty } \frac{{{{\left( {{x^3} + 2} \right)}^2}{{\left( {a{x^2} - 1} \right)}^3}}}{{{{\left( {b{x^4} + x} \right)}^3}}} = 27\] |  |
| 2.A | a + b = 0 |  |
| 2.B | a – b = 0 |  |
| 2.C | 3a – b = 0 |  |
| 2.D | a – 3b = 0 |  |
| 3.Đáp án | D |  |
| 4.Đáp án chi tiết | \[\begin{gathered}  \mathop {\lim }\limits\_{x \to - \infty } \frac{{{{\left( {{x^3} + 2} \right)}^2}{{\left( {a{x^2} - 1} \right)}^3}}}{{{{\left( {b{x^4} + x} \right)}^3}}} = \mathop {\lim }\limits\_{x \to - \infty } \frac{{{x^{12}}.\frac{{{{\left( {{x^3} + 2} \right)}^2}}}{{{x^6}}}.\frac{{{{\left( {{x^2} - 1} \right)}^3}}}{{{x^6}}}}}{{{x^{12}}.\frac{{{{\left( {{x^4} + x} \right)}^3}}}{{{x^{12}}}}}} = \mathop {\lim }\limits\_{x \to - \infty } \frac{{{{\left( {1 + \frac{2}{{{x^3}}}} \right)}^2}{{\left( {a - \frac{1}{{{x^2}}}} \right)}^3}}}{{{{\left( {b + \frac{1}{{{x^3}}}} \right)}^3}}} \hfill \\  = \frac{{{a^3}}}{{{b^3}}} = 27 \Leftrightarrow a = 3b \hfill \\  \end{gathered} \] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.l** | \[\mathop {\lim }\limits\_{x \to - \infty } \left( {1 - bx} \right)\sqrt {\frac{{3x + 1}}{{a{x^3} + 1}}} = 2\sqrt 3 \].Tìm điều kiện của a,b (b > 0) |
| 2.A | a, b > 0 và \[{b^2} = 4a\] |
| 2.B | a \[ \geqslant \] 0, b > 0 và \[{b^2} = 4a\] |
| 2.C | a \[ \geqslant \]0, b > 0 và \[4b = 3a\] |
| 2.D | a, b > 0 và \[4b = 3a\] |
| 3.Đáp án | A |
| 4.Đáp án chi tiết | \[\begin{gathered}  \mathop {\lim }\limits\_{x \to - \infty } \left( {1 - bx} \right)\sqrt {\frac{{3x + 1}}{{a{x^3} + 1}}} = \mathop {\lim }\limits\_{x \to - \infty } \sqrt {\frac{{\left( {3x + 1} \right){{\left( {1 - bx} \right)}^2}}}{{a{x^3} + 1}}} \hfill \\  = \mathop {\lim }\limits\_{x \to - \infty } \sqrt {\frac{{{x^3}\left( {3 + \frac{1}{x}} \right){{\left( {\frac{1}{x} - b} \right)}^2}}}{{{x^3}\left( {a + \frac{1}{{{x^3}}}} \right)}}} = \mathop {\lim }\limits\_{x \to - \infty } \sqrt {\frac{{\left( {3 + \frac{1}{x}} \right){{\left( {\frac{1}{x} - b} \right)}^2}}}{{\left( {a + \frac{1}{{{x^3}}}} \right)}}} = \frac{{b\sqrt 3 }}{{\sqrt a }} = 2\sqrt 3 \Rightarrow {b^2} = 4a;\,\,\,b,a > 0 \hfill \\  \end{gathered} \] |
| 5.Level |  |
| 6.Ghi chú |  |