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| **1.a** | Cho giới hạn \[\lim \sqrt {an} \left( {\sqrt {n + 2} - \sqrt n } \right) = 1\](a>0) Giá trị của a là: |  |
| 2.A | \[\frac{1}{2}\] |  |
| 2.B | \[\frac{1}{4}\] |  |
| 2.C | 2 |  |
| 2.D | 1 |  |
| 3.Đáp án | D |  |
| 4.Đáp án chi tiết | \[\begin{gathered}  \lim \sqrt {an} \left( {\sqrt {n + 2} - \sqrt n } \right) = \lim \sqrt {an} \frac{{n + 2 - n}}{{\sqrt {n + 2} + \sqrt n }} = \lim \frac{{2\sqrt {an} }}{{\sqrt {n + 2} + \sqrt n }} = \lim \frac{{2\sqrt a }}{{\sqrt {1 + \frac{2}{n}} + 1}} = \sqrt a \hfill \\  \Rightarrow \sqrt a = 1 \Leftrightarrow a = 1 \hfill \\  \end{gathered} \] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.b** | Cho \[\lim \frac{{{{\left( {an + 1} \right)}^3}.{{\left( {n - 2} \right)}^4}}}{{b{n^7} + 1}} = \frac{8}{3}\]. Tìm a,b biết \[4b - 3{a^2} = 0\]. |  |
| 2.A | a = 0, b = \[\frac{3}{8}\] |  |
| 2.B | a = 0, b = 0 |  |
| 2.C | a = 2, b = 1 |  |
| 2.D | a = 2, b = 3 |  |
| 3.Đáp án | D |  |
| 4.Đáp án chi tiết | \[\lim \frac{{{{\left( {an + 1} \right)}^3}.{{\left( {n - 2} \right)}^4}}}{{b{n^7} + 1}} = \frac{{{a^3}}}{b} = \frac{8}{3} \Rightarrow 3{a^3} - 8b = 0\]  \[\left\{ \begin{gathered}  3{a^2} - 4b = 0 \hfill \\  3{a^3} - 8b = 0 \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  {a^3} - 2{a^2} = 0 \hfill \\  3{a^2} - 4b = 0 \hfill \\  \end{gathered} \right. \Leftrightarrow \left[ \begin{gathered}  a = 2 \Rightarrow b = 3 \hfill \\  a = 0 \Rightarrow b = 0(L) \hfill \\  \end{gathered} \right.\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.c** | Cho \[\lim \frac{{{{\left( {2 - n} \right)}^2}{{\left( {an + 1} \right)}^3}}}{{{b^3}.{n^5} + 1}} = 27\]và a + b = 4.Tìm a, b |  |
| 2.A | a = 1, b = 3 |  |
| 2.B | a = 3, b = 1 |  |
| 2.C | a = 2, b = 2 |  |
| 2.D | a = 1, b = \[\frac{1}{3}\] |  |
| 3.Đáp án | B |  |
| 4.Đáp án chi tiết | \[\lim \frac{{{{\left( {2 - n} \right)}^2}{{\left( {an + 1} \right)}^3}}}{{{b^3}.{n^5} + 1}} = \frac{{{a^3}}}{{{b^3}}} = 27 \Leftrightarrow \frac{a}{b} = 3 \Rightarrow a - 3b = 0\]  \[\left\{ \begin{gathered}  a - 3b = 0 \hfill \\  a + b = 4 \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  a = 3 \hfill \\  b = 1 \hfill \\  \end{gathered} \right.\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.d** | Cho \[\lim \frac{{b{n^2} + n - 1}}{{\sqrt {a{n^4} + a} + n}} = 3\]. Tìm a, b biết a + b = 4 |  |
| 2.A | a = 3, b = 1 |  |
| 2.B | a = 1, b = 3 |  |
| 2.C | a = 2, b = 2 |  |
| 2.D | a = 1, b = \[\frac{1}{3}\] |  |
| 3.Đáp án | B |  |
| 4.Đáp án chi tiết | \[\lim \frac{{b{n^2} + n - 1}}{{\sqrt {a{n^4} + a} + n}} = \frac{b}{{\sqrt a }} = 3 \Rightarrow \frac{{{b^2}}}{a} = 9 \Leftrightarrow a = \frac{{{b^2}}}{9}\]  \[ \Rightarrow \frac{{{b^2}}}{9} + b = 4 \Leftrightarrow \left[ \begin{gathered}  b = 3 \Rightarrow a = 1 \hfill \\  b = - 12\left( L \right) \hfill \\  \end{gathered} \right.\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.e** | Cho \[\lim \frac{{{{27}^{\frac{{n + 1}}{3}}} - b{{.2}^n}}}{{{2^{n + 2}} + a{{.3}^n} - 4}} = 3\]. Biết \[{a^3} + ab = 5\]. Tìm a,b |  |
| 2.A | a = 0, b = 5 |  |
| 2.B | a = 4, b = \[\frac{1}{3}\] |  |
| 2.C | a = 2, b =\[ - \frac{3}{2}\] |  |
| 2.D | a = 1, b = 4 |  |
| 3.Đáp án | D |  |
| 4.Đáp án chi tiết | \[\lim \frac{{{{27}^{\frac{{n + 1}}{3}}} - b{{.2}^n}}}{{{2^{n + 2}} + a{{.3}^n} - 4}} = \lim \frac{{{3^{n + 1}} - b{{.2}^n}}}{{{{4.2}^n} + a{{.3}^n} - 4}} = \lim \frac{{\frac{{{3^n}}}{{{3^n}}}.3 - b.{{\left( {\frac{2}{3}} \right)}^n}}}{{4.{{\left( {\frac{2}{3}} \right)}^n} + a - \frac{4}{{{3^n}}}}}\]\[ = \lim \frac{{3 - b.{{\left( {\frac{2}{3}} \right)}^n}}}{{4.{{\left( {\frac{2}{3}} \right)}^n} + a - \frac{4}{{{3^n}}}}} = \lim \frac{{3 - b.{{\left( {\frac{2}{3}} \right)}^n}}}{{4{{\left( {\frac{2}{3}} \right)}^n} + a - \frac{4}{{{3^n}}}}} = \frac{3}{a} = 3 \Rightarrow a = 1\]  \[ \Rightarrow b = 4\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.f** | Cho \[4a + 3b = 30\]. Tìm a, b biết \[\lim \frac{{a{n^3} + n + 2}}{{\sqrt {{n^6} + bn + 1} }} = 3\] |  |
| 2.A | a = 3, b = 4 |  |
| 2.B | a = 4, b = \[\frac{{14}}{3}\] |  |
| 2.C | a = 3, b = 6 |  |
| 2.D | a = 4, b = \[\frac{{16}}{9}\] |  |
| 3.Đáp án | C |  |
| 4.Đáp án chi tiết | \[\lim \frac{{a{n^3} + n + 2}}{{\sqrt {{n^6} - n + 1} }} = \lim \frac{{a + \frac{1}{{{n^2}}} + \frac{2}{{{n^3}}}}}{{\sqrt {1 - \frac{1}{{{n^5}}} + \frac{1}{{{n^6}}}} }} = a = 3\]\[ \Rightarrow b = 6\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.g** | \[lim\frac{{{{\left( {{n^3} - 1} \right)}^2}.{{\left( {a{n^2} + 1} \right)}^3}}}{{{{\left( {b{n^4} + 2n - 1} \right)}^3}}} = \frac{{27}}{{64}}\].Tìm điều kiện của a,b |  |
| 2.A | \[3a - 4b - 3 = 0\] |  |
| 2.B | \[4a - 3b = 0\] |  |
| 2.C | \[4a + 3b = 0\] |  |
| 2.D | \[3b + 4b - 4 = 0\] |  |
| 3.Đáp án | B |  |
| 4.Đáp án chi tiết | \[\begin{gathered}  \lim \frac{{{{\left( {{n^3} - 1} \right)}^2}.{{\left( {a{n^2} + 1} \right)}^3}}}{{{{\left( {b{n^4} + 2n - 1} \right)}^3}}} = \lim \frac{{\frac{{{{\left( {{n^3} - 1} \right)}^2}}}{{{n^6}}}.\frac{{{{\left( {a{n^2} + 1} \right)}^3}}}{{{n^6}}}}}{{\frac{{{{\left( {b{n^4} + 2n - 1} \right)}^3}}}{{{n^{12}}}}}} = \lim \frac{{{{\left( {1 - \frac{1}{{{n^3}}}} \right)}^2}.{{\left( {a + \frac{1}{{{n^2}}}} \right)}^3}}}{{{{\left( {b + \frac{2}{{{n^3}}} - \frac{1}{{{n^4}}}} \right)}^3}}} = \frac{{{a^3}}}{{{b^3}}} = \frac{{27}}{{64}} \hfill \\  \Rightarrow \frac{a}{b} = \frac{3}{4} \Leftrightarrow 4a - 3b = 0 \hfill \\  \end{gathered} \] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.h** | Tìm a sao cho : \[\lim \left( {2n - \sqrt {a{n^2} + 1} } \right) = + \infty \] |  |
| 2.A | \[0 \leqslant a \leqslant 4\] |  |
| 2.B | \[a > 4\] |  |
| 2.C | \[a \geqslant 4\] |  |
| 2.D | \[0 \leqslant a < 4\] |  |
| 3.Đáp án | D |  |
| 4.Đáp án chi tiết | \[\lim \left( {2n - \sqrt {a{n^2} + 1} } \right) = \lim \frac{{4{n^2} - a{n^2} - 1}}{{2n + \sqrt {a{n^2} + 1} }}\]\[ = \lim \frac{{\left( {4 - a} \right){n^2} - 1}}{{2n + \sqrt {{n^2} + 1} }} = \lim \frac{{\left( {4 - a} \right)n - \frac{1}{n}}}{{2 + \sqrt {a + \frac{1}{{{n^2}}}} }}\]  Để giới hạn bằng \[ + \infty \Leftrightarrow \left\{ \begin{gathered}  4 - a > 0 \hfill \\  a \geqslant 0 \hfill \\  \end{gathered} \right. \Leftrightarrow 0 \leqslant a < 4\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.i** | \[\lim \frac{{\sqrt {a{n^2} + 1} - \sqrt {2 + b{n^2}} }}{{n + 1}} = 0\]. Tìm a, b |  |
| 2.A | \[a = b\] \[\left( {a,b \geqslant 0} \right)\] |  |
| 2.B | \[a = - b\] \[\left( {a,b \geqslant 0} \right)\] |  |
| 2.C | \[a = b\] \[\left( {a,b > 0} \right)\] |  |
| 2.D | \[a = - b\]\[\left( {a,b > 0} \right)\] |  |
| 3.Đáp án | A |  |
| 4.Đáp án chi tiết | \[\lim \frac{{\sqrt {a{n^2} + 1} - \sqrt {2 + b{n^2}} }}{{n + 1}} = \lim \frac{{a{n^2} + 1 - 2 - b{n^2}}}{{\left( {n + 1} \right)\left( {\sqrt {a{n^2} + 1} + \sqrt {2 + b{n^2}} } \right)}}\]\[ = \lim \frac{{\left( {a - b} \right){n^2} - 1}}{{\left( {n + 1} \right)\left( {\sqrt {a{n^2} + 1} + \sqrt {2 + b{n^2}} } \right)}}\]\[ = \lim \frac{{\left( {a - b} \right) - \frac{1}{{{n^2}}}}}{{\left( {1 + \frac{1}{n}} \right)\left( {\sqrt {a + \frac{1}{{{n^2}}}} + \sqrt {\frac{2}{{{n^2}}} + b} } \right)}}\]  Để giới hạn bằng 0\[ \Leftrightarrow \left\{ \begin{gathered}  a - b = 0 \hfill \\  a,b \geqslant 0 \hfill \\  \end{gathered} \right. \Leftrightarrow \left\{ \begin{gathered}  a = b \hfill \\  a,b \geqslant 0 \hfill \\  \end{gathered} \right.\] |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |
| **1.j** |  |  |
| 2.A |  |  |
| 2.B |  |  |
| 2.C |  |  |
| 2.D |  |  |
| 3.Đáp án |  |  |
| 4.Đáp án chi tiết |  |  |
| 5.Level |  |  |
| 6.Ghi chú |  |  |