

201-1-9561

1 K" 13N

2 ON 8'27A

(N\_0(\epsilon) 11c3N) \lim\_{n \to \infty} a\_n = a ' ) 1N'210) (1

1.13. a\_n = (1-2n^2)/(n^2+3), a = -2.

1.15. a\_n = n/(3n-1), a = 1/3.

1.17. a\_n = (4+2n)/(1-3n), a = -2/3.

1.19. a\_n = (3-n^2)/(1+2n^2), a = -1/2.

1.21. a\_n = (3n-1)/(5n+1), a = 3/5.

1.23. a\_n = (1-2n^2)/(2+4n^2), a = -1/2.

1.25. a\_n = (2-2n)/(3+4n), a = -1/2.

1.27. a\_n = (1+3n)/(6-n), a = -3.

1.14. a\_n = 3n^2/(2-n^2), a = -3.

1.16. a\_n = 3n^3/(n^3-1), a = 3.

1.18. a\_n = (5n+15)/(6-n), a = -5.

1.20. a\_n = (2n-1)/(2-3n), a = -2/3.

1.22. a\_n = (4n-3)/(2n+1), a = 2.

1.24. a\_n = (5n+1)/(10n-3), a = 1/2.

1.26. a\_n = (23-4n)/(2-n), a = 4.

1.28. a\_n = (2n+3)/(n+5), a = 2.

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2.1. \lim\_{n \to \infty} ((3-n)^2 + (3+n)^2) / ((3-n)^3 - (3+n)^3)

2.3. \lim\_{n \to \infty} ((3-n)^4 - (2-n)^4) / ((1-n)^3 - (1+n)^3)

2.5. \lim\_{n \to \infty} ((6-n)^2 - (6+n)^2) / ((6+n)^2 - (1-n)^2)

2.7. \lim\_{n \to \infty} ((1+2n)^3 - 8n^3) / ((1+2n)^2 + 4n^2)

2.9. \lim\_{n \to \infty} ((3-n)^3) / ((n+1)^2 - (n+1)^3)

2.11. \lim\_{n \to \infty} (2(n+1)^3 - (n-2)^3) / (n^2 + 2n - 3)

2.13. \lim\_{n \to \infty} ((n+3)^3 + (n+4)^3) / ((n+3)^4 - (n+4)^4)

2.15. \lim\_{n \to \infty} (8n^3 - 2n) / ((n+1)^4 - (n-1)^4)

2.17. \lim\_{n \to \infty} ((2n-3)^3 - (n+5)^3) / ((3n-1)^3 + (2n+3)^3)

2.19. \lim\_{n \to \infty} ((2n+1)^3 + (3n+2)^3) / ((2n+3)^3 - (n-7)^3)

2.2. \lim\_{n \to \infty} ((3-n)^4 - (2-n)^4) / ((1-n)^4 - (1+n)^4)

2.4. \lim\_{n \to \infty} ((1-n)^4 - (1+n)^4) / ((1+n)^3 - (1-n)^3)

2.6. \lim\_{n \to \infty} ((n+1)^3 - (n+1)^2) / ((n-1)^3 - (n+1)^3)

2.8. \lim\_{n \to \infty} ((3-4n)^2) / ((n-3)^3 - (n+3)^3)

2.10. \lim\_{n \to \infty} ((n+1)^2 + (n-1)^2 - (n+2)^3) / ((4-n)^3)

2.12. \lim\_{n \to \infty} ((n+1)^3 + (n+2)^3) / ((n+4)^3 + (n+5)^3)

2.14. \lim\_{n \to \infty} ((n+1)^4 - (n-1)^4) / ((n+1)^3 + (n-1)^3)

2.16. \lim\_{n \to \infty} ((n+6)^3 - (n+1)^3) / ((2n+3)^2 + (n+4)^2)

2.18. \lim\_{n \to \infty} ((n+10)^2 + (3n+1)^2) / ((n+6)^3 - (n+1)^3)

2.20. \lim\_{n \to \infty} ((n+7)^3 - (n+2)^3) / ((3n+2)^2 + (4n+1)^2)

$$3.1. \lim_{n \rightarrow \infty} \frac{n \sqrt[3]{5n^2} + \sqrt[4]{9n^8 + 1}}{(n + \sqrt{n}) \sqrt{7 - n + n^2}}$$

$$3.3. \lim_{n \rightarrow \infty} \frac{\sqrt{n^3 + 1} - \sqrt{n - 1}}{\sqrt[3]{n^3 + 1} - \sqrt{n - 1}}$$

$$3.5. \lim_{n \rightarrow \infty} \frac{\sqrt{3n - 1} - \sqrt[3]{125n^3 + n}}{\sqrt[5]{n} - n}$$

$$3.7. \lim_{n \rightarrow \infty} \frac{\sqrt{n + 2} - \sqrt{n^2 + 2}}{\sqrt[4]{4n^4 + 1} - \sqrt[3]{n^4 - 1}}$$

$$3.9. \lim_{n \rightarrow \infty} \frac{6n^3 - \sqrt{n^5 + 1}}{\sqrt{4n^6 + 3} - n}$$

$$3.11. \lim_{n \rightarrow \infty} \frac{n \sqrt[4]{3n + 1} + \sqrt{81n^4 - n^2 + 1}}{(n + \sqrt[3]{n}) \sqrt{5 - n + n^2}}$$

$$3.13. \lim_{n \rightarrow \infty} \frac{\sqrt{n^5 + 3} - \sqrt{n - 3}}{\sqrt[5]{n^5 + 3} + \sqrt{n - 3}}$$

$$3.2. \lim_{n \rightarrow \infty} \frac{\sqrt{n - 1} - \sqrt{n^2 + 1}}{\sqrt[3]{3n^3 + 3} + \sqrt[4]{n^5 + 1}}$$

$$3.4. \lim_{n \rightarrow \infty} \frac{\sqrt[3]{n^2 - 1} + 7n^3}{\sqrt[4]{n^{12} + n + 1} - n}$$

$$3.6. \lim_{n \rightarrow \infty} \frac{n \sqrt[5]{n} - \sqrt[3]{27n^6 + n^2}}{(n + \sqrt[4]{n}) \sqrt{9 + n^2}}$$

$$3.8. \lim_{n \rightarrow \infty} \frac{\sqrt{n^4 + 2} + \sqrt{n - 2}}{\sqrt[4]{n^4 + 2} + \sqrt{n - 2}}$$

$$3.10. \lim_{n \rightarrow \infty} \frac{\sqrt{5n + 2} - \sqrt[3]{8n^3 + 5}}{\sqrt[4]{n + 7} - n}$$

$$3.12. \lim_{n \rightarrow \infty} \frac{\sqrt{n + 3} - \sqrt{n^2 - 3}}{\sqrt[3]{n^5 - 4} - \sqrt[4]{n^4 + 1}}$$

$$3.14. \lim_{n \rightarrow \infty} \frac{\sqrt[3]{n} - 9n^2}{3n - \sqrt[4]{9n^8 + 1}}$$

$$4.1. \lim_{n \rightarrow \infty} n (\sqrt{n^2 + 1} + \sqrt{n^2 - 1}).$$

$$4.3. \lim_{n \rightarrow \infty} (n - \sqrt[3]{n^3 - 5}) n \sqrt{n}.$$

$$4.5. \lim_{n \rightarrow \infty} \frac{\sqrt{n^5 - 8} - n \sqrt{n(n^2 + 5)}}{\sqrt{n}}$$

$$4.7. \lim_{n \rightarrow \infty} (n + \sqrt[3]{4 - n^3}).$$

$$4.9. \lim_{n \rightarrow \infty} [\sqrt{(n + 2)(n + 1)} - \sqrt{(n - 1)(n + 3)}].$$

$$4.10. \lim_{n \rightarrow \infty} n^2 [\sqrt{n(n^4 - 1)} - \sqrt{n^5 - 8}].$$

$$4.11. \lim_{n \rightarrow \infty} n (\sqrt[3]{5 + 8n^3} - 2n).$$

$$4.13. \lim_{n \rightarrow \infty} [\sqrt[3]{(n + 2)^3} - \sqrt[3]{(n - 3)^2}].$$

$$4.2. \lim_{n \rightarrow \infty} n [\sqrt{n(n - 2)} - \sqrt{n^2 - 3}].$$

$$4.4. \lim_{n \rightarrow \infty} [\sqrt{(n^2 + 1)(n^2 - 4)} - \sqrt{n^4 - 9}].$$

$$4.6. \lim_{n \rightarrow \infty} (\sqrt{n^2 - 3n + 2} - n).$$

$$4.8. \lim_{n \rightarrow \infty} [\sqrt{n(n + 2)} - \sqrt{n^2 - 2n + 3}].$$

$$4.12. \lim_{n \rightarrow \infty} n^2 (\sqrt[3]{5 + n^3} - \sqrt[3]{3 + n^3}).$$

$$4.14. \lim_{n \rightarrow \infty} \frac{\sqrt{(n + 1)^3} - \sqrt{n(n - 1)(n - 3)}}{\sqrt{n}}$$

$$\begin{array}{ll}
5.1. \lim_{n \rightarrow \infty} \left( \frac{1}{n^2} + \frac{2}{n^2} + \frac{3}{n^2} + \dots + \frac{n-1}{n^2} \right) & 5.2. \lim_{n \rightarrow \infty} \frac{(2n+1)! + (2n+2)!}{(2n+3)!} \\
5.3. \lim_{n \rightarrow \infty} \left[ \frac{1+3+5+7+\dots+(2n-1)}{n+1} - \frac{2n+1}{2} \right] & 5.4. \lim_{n \rightarrow \infty} \frac{2^{n+1} + 3^{n+1}}{2^n + 3^n} \\
5.5. \lim_{n \rightarrow \infty} \frac{1+2+3+\dots+n}{\sqrt{9n^4+1}} & 5.6. \lim_{n \rightarrow \infty} \frac{1+3+5+\dots+(2n-1)}{1+2+3+\dots+n} \\
5.7. \lim_{n \rightarrow \infty} \left[ \frac{1+3+5+\dots+(2n-1)}{n+3} - n \right] & 5.8. \lim_{n \rightarrow \infty} \frac{1+4+7+\dots+(3n-2)}{\sqrt{5n^4+n+1}} \\
5.9. \lim_{n \rightarrow \infty} \frac{(n+4)! - (n+2)!}{(n+3)!} & 5.10. \lim_{n \rightarrow \infty} \frac{(3n-1)! + (3n+1)!}{(3n)! (n-1)} \\
5.11. \lim_{n \rightarrow \infty} \frac{2^n - 5^{n+1}}{2^{n+1} + 5^{n+2}} & 5.12. \lim_{n \rightarrow \infty} \frac{1 + \frac{1}{3} + \frac{1}{3^2} + \dots + \frac{1}{3^n}}{1 + \frac{1}{5} + \frac{1}{5^2} + \dots + \frac{1}{5^n}} \\
5.13. \lim_{n \rightarrow \infty} \frac{1-3+5-7+9-11+\dots+(4n-3)-(4n-1)}{\sqrt{n^2+1} + \sqrt{n^2+n+1}} &
\end{array}$$

$$6.1. \lim_{n \rightarrow \infty} \left( \frac{n+1}{n-1} \right)^n$$

$$6.2. \lim_{n \rightarrow \infty} \left( \frac{2n+3}{2n+1} \right)^{n+1}$$

$$6.3. \lim_{n \rightarrow \infty} \left( \frac{n^2-1}{n^2} \right)^{n^4}$$

$$6.4. \lim_{n \rightarrow \infty} \left( \frac{n-1}{n+3} \right)^{n+2}$$

$$6.5. \lim_{n \rightarrow \infty} \left( \frac{2n^2+2}{2n^2+1} \right)^{n^2}$$