Calculus

Limits

1. $\lim_{x\to 3}(x^2-2x+3)$
2. $\lim_{x\to -2}\dfrac{x^2-x+5}{x-2}$
3. $\lim_{x\to 1}\dfrac{x^2-x+3}{x+1}$
4. $\lim_{x\to 3}\dfrac{(x^2+6x)^{\frac{3}{2}}}{\sqrt{5x+1}}$
5. $\lim_{x\to 3}\dfrac{2\sqrt{x}+x^{\frac{3}{2}}}{\sqrt[4]{x}+5}$
6. $\lim_{x\to +\infty} x^2+1000x$
7. $\lim_{x\to +\infty} x^3-1000x^2$
8. $\lim_{x\to -\infty} x^2-1000x$
9. $\lim_{x\to -\infty} x^3-1000x^2$
10. $\lim_{x\to +\infty}\dfrac{3x+2}{2x+1}$
11. $\lim_{x\to +\infty}\dfrac{3x^2+2}{2x+1}$
12. $\lim_{x\to +\infty}\dfrac{3x+2}{2x^2+1}$
13. $\lim_{x\to +\infty}\dfrac{3x^2+2}{2x+1}$
14. $\lim_{x\to -\infty}\dfrac{3x^2+1}{2x-1}$
15. $\lim_{x\to +\infty}\dfrac{x^2-1}{x^2+1}$
16. $\lim_{x\to +\infty}\dfrac{x^2+2x+2}{x^2+3x+2}$
17. $\lim_{x\to +\infty}\dfrac{2x^2+5x-7}{x^3-3x^2+1}$
18. $\lim_{x\to -\infty}\dfrac{2x^2+5x-7}{x^3-3x^2+1}$
19. $\lim_{x\to +\infty}\dfrac{3x^3-5x-10}{x^2+6x+10}$
20. $\lim_{x\to -\infty}\dfrac{3x^3-5x-10}{x^2+6x+10}$
21. $\lim_{x\to +\infty}\sqrt{x^2-x}-x$
22. $\lim_{x\to +\infty}\dfrac{x}{\sqrt{4x^2+x}-x}$
23. $\lim_{x\to +\infty}\dfrac{x}{\sqrt{4x^2+x}-2x}$

24. $\lim_{x\to+\infty} \dfrac{x^2}{\sqrt{4x^2+x}-x}$

25. $\lim_{x\to\infty} \dfrac{x}{\sqrt{x^2+2}+x}$

26. $\lim_{x\to+\infty} \dfrac{\sqrt{x^4+1}-2x^2-1}{x^2}$

27. $\lim_{x\to\infty} \sqrt{x^2+x+1}-x$

28. $\lim_{n\to\infty} \sqrt{\dfrac{4x^2+2x+1}{3x}}$

29. $\lim_{n\to\infty} \dfrac{\sqrt{4x^2+x}}{\sqrt{9x^2-3x}}$

30. $\lim_{x\to\infty} \dfrac{\sqrt{9x^2+x+3}}{6x}$

31. $\lim_{x\to\pm\infty} \dfrac{7x^3+2x^2}{4x^3-x}$

32. $\lim_{x\to-\infty} \dfrac{x^4+2x-3}{x^2+100x}$

33. $\lim_{x\to-\infty} \dfrac{3x+2}{\sqrt[3]{x^3-2}}$

34. $\lim_{x\to\infty} \dfrac{(x+1)^3-(x-1)^3}{(x+1)^2+(x-1)^2}$

35. $\lim_{x\to\infty} \dfrac{3x^2+2x}{x+2}-3x$

36. $\lim_{x\to\infty} \dfrac{\sqrt{1+x^2}-\sqrt{1+x}}{\sqrt{1+x^3}-\sqrt{1+x}}$

37. $\lim_{x\to-2} \dfrac{x^3+8}{x+2}$

38. $\lim_{x\to1} \dfrac{x^2-x}{2x^2+5x-7}$

39. $\lim_{x\to16} \dfrac{\sqrt{x}-4}{x-16}$

40. $\lim_{x\to\frac{-3}{2}} \dfrac{2x+3}{4x^2+12x+9}$

41. $\lim_{x\to8} \dfrac{\sqrt{x+1}-3}{x-8}$

42. $\lim_{h\to1} \dfrac{h^4-1}{h^2-1}$

43. $\lim_{x\to-3} \dfrac{x+3}{\sqrt{x+7}-2}$

44. $\lim_{x\to5} \dfrac{\sqrt{x-1}-2}{x^2-25}$

45. $\lim_{x\to0} \dfrac{\sqrt{4+x^2}-2}{x^2}$

46. $\lim_{x\to0} \dfrac{1}{x}\left\{\sqrt{1+\dfrac{1}{x^2}}-\dfrac{1}{x}\right\}$

47. $\lim_{h\to1} \dfrac{(h-1)^2}{h^4-1}$

48. $\lim_{x\to 3}\left(\frac{x^2}{x-3}-\frac{9}{x-3}\right)$

49. $\lim_{x\to 1}\frac{2x^3-x^2-1}{3x^3-3x^2+2x-2}$

50. $\lim_{x\to 1}\frac{x^7-1}{x-1}$

51. $\lim_{x\to -2}\frac{x^5+32}{x+2}$

52. $\lim_{x\to 2}\frac{x^4-16}{x-2}$

53. $\lim_{x\to 2}\frac{x^{-3}-\frac{1}{8}}{x-2}$

54. $\lim_{x\to 25}\frac{\sqrt{x}-5}{x-25}$

55. $\lim_{x\to -27}\frac{\sqrt[3]{x}+3}{x+27}$

56. $\lim_{x\to 2}\frac{x^5-32}{x^2-4}$

57. $\lim_{x\to 3}\frac{x-3}{x^3-27}$

58. $\lim_{x\to -3}\frac{x^4-81}{x^3+27}$

59. $\lim_{x\to 1}\frac{x^4-1}{x^{-2}-1}$

60. $\lim_{x\to 64}\frac{\sqrt[3]{x}-4}{\sqrt{x}-8}$

61. $\lim_{x\to a}\frac{x^{\frac{5}{7}}-a^{\frac{5}{7}}}{x^{\frac{3}{7}}-a^{\frac{3}{7}}}$

62. $\lim_{x\to 0}\frac{\sqrt{1-x}-1}{x}$

63. $\lim_{x\to 0}\frac{\sqrt{1+x}-\sqrt{1-x}}{x}$

64. $\lim_{x\to 0}\frac{\sqrt{1+x^3}-\sqrt{1-x^3}}{x^3}$

65. $\lim_{x\to 2}\frac{x^2-4}{\sqrt{x+2}-\sqrt{3x-2}}$

66. $\lim_{x\to 0}\frac{\sqrt{x^2-1}-\sqrt{x-1}}{\sqrt{x^3-1}}$

67. $\lim_{x\to 2}\frac{\sqrt{x^2+5}-3}{x^2-2x}$

68. $\lim_{x\to 0}\frac{\tan 2x}{x}$

69. $\lim_{x\to 0}\frac{\sin 3x}{x}$

70. $\lim_{x\to 0}\frac{\tan 2x}{\sin 5x}$

71. $\lim_{x\to 0}\frac{\sin x^2}{x}$

72. $\lim_{x\to\frac{\pi}{2}} \dfrac{\cos x}{\frac{\pi}{2} - x}$

73. $\lim_{x\to\frac{\pi}{4}} \dfrac{\sin x - \cos x}{x - \pi/4}$

74. $\lim_{x\to 0} \dfrac{\sin 2x - x}{\tan 3x - 2x}$

75. $\lim_{x\to 0} \dfrac{\cos 2x - 1}{\sin^2 3x}$

76. $\lim_{x\to\pi} \dfrac{\sin x}{x^3 - \pi^3}$

77. $\lim_{x\to 0} \dfrac{1 - \cos 3x}{x^2}$

78. $\lim_{x\to 0} \dfrac{\sin 2x + 3x}{2x + \sin 3x}$

79. $\lim_{x\to 0} \dfrac{\tan x - \sin x}{x(1 - \cos 2x)}$

80. $\lim_{x\to 0} \dfrac{x - \sin x}{x^2}$

81. $\lim_{x\to 0} \dfrac{1 - \cos 3x}{\tan^2 4x - x^2}$

82. $\lim_{x\to 0} \dfrac{\tan x - \sin x}{\sin^3 x}$

83. $\lim_{x\to 0} \dfrac{1 - \cos 3x}{\cos 4x}$

84. $\lim_{x\to 0} \dfrac{\tan x - \sin x}{x^3}$

85. $\lim_{x\to 0} \dfrac{(\sin x + 2)^2 - 4}{x}$

86. $\lim_{x\to 0} \left(\dfrac{1}{\sin x} - \dfrac{1}{\tan x} \right)$

87. $\lim_{x\to 0} \dfrac{\sin x - \sin a}{\sqrt{x} - \sqrt{a}}$

88. $\lim_{x\to 0} \dfrac{x \tan x}{1 - \cos x}$

89. $\lim_{x\to 0} \dfrac{\csc x - \cot x}{x}$

90. $\lim_{x\to\frac{\pi}{2}} (\sec x - \tan x)$

91. $\lim_{x\to\frac{\pi}{4}} \dfrac{\sec^2 x - 2}{\tan x - 1}$

92. $\lim_{x\to\frac{\pi}{4}} \dfrac{\sin x - \cos x}{x - \frac{\pi}{4}}$

93. $\lim_{x\to\frac{\pi}{2}} \dfrac{1 + \cos 2x}{(\pi - 2x)^2}$

94. $\lim_{x\to\pi} \dfrac{1 + \cos x}{\tan^2 x}$

95. $\lim_{x\to 1} (1 - x) \tan \dfrac{\pi x}{2}$

96. $\lim_{x\to 0} \dfrac{\sqrt{9 + \sin x} - 3}{\sqrt{3 + x} - \sqrt{3}}$

97. $\lim_{x\to 0} \dfrac{\sqrt{16 + x^2} - 4}{1 - \cos x}$

98. $\lim_{x\to 0}\dfrac{\sqrt{\cos^2 x+\sin x}-\cos x}{\sqrt{4+x}-2}$

99. $\lim_{x\to \frac{\pi}{3}}\dfrac{\tan^3 x-3\tan x}{\cos\left(x+\frac{\pi}{6}\right)}$

100. $\lim_{x\to 0}\dfrac{\sqrt{5+x^2}-\sqrt{5}}{\sqrt{20+\sin^2 x}-\sqrt{20}}$

101. $\lim_{x\to \frac{\pi}{2}}\dfrac{\sqrt{1+\cos 2x}}{\sqrt{\pi}-\sqrt{2x}}$

102. $\lim_{x\to 0}\dfrac{1-\cos^2(2\sin x)}{1-\cos 2x}$