

SOLUCIONES REPASO DE LÍMITES

1.- Calcula los siguientes límites:

$$1. \lim_{x \rightarrow 2} (x^3 + x) = 10$$

$$2. \lim_{x \rightarrow 2} \left(x^3 + \frac{1}{x} \right) = 17/2$$

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

$$4. \lim_{x \rightarrow 0} \left(x^3 + \frac{1}{x} \right) = \pm\infty$$

$$5. \lim_{x \rightarrow -1} \left(\frac{1}{x+1} + x \right) = \pm\infty$$

$$6. \lim_{x \rightarrow 2^+} \left(\frac{1}{x-2} + \frac{1}{x^2-4} \right) = +\infty$$

$$7. \lim_{x \rightarrow 0} \left(\frac{1}{x^4} + \frac{1}{x^2} \right) = +\infty$$

$$8. \lim_{x \rightarrow 2^+} \left(\frac{1}{x-2} - \frac{1}{(x-2)^2} \right) = -\infty$$

$$9. \lim_{x \rightarrow 0} \left(\frac{1}{x^4} - \frac{1}{x^2} \right) = +\infty$$

$$10. \lim_{x \rightarrow 0} \left(-\frac{1}{x^4} - \frac{1}{x^2} \right) = -\infty$$

$$11. \lim_{x \rightarrow 2} \left(\frac{6}{x-2} - \frac{4}{x^2-8x+12} \right) = \infty$$

$$12. \lim_{x \rightarrow 2} 2x^3 = 16$$

$$13. \lim_{x \rightarrow 0} x(x+2) = 0$$

$$14. \lim_{x \rightarrow 4} x(x-4) = 0$$

$$15. \lim_{x \rightarrow 0^+} \frac{1}{x}(x+2) = +\infty$$

$$16. \lim_{x \rightarrow 0^+} \frac{-1}{x}(x-2) = +\infty$$

$$17. \lim_{x \rightarrow 1} \frac{x-1}{x}(x^2-1) = 0$$

$$18. \lim_{x \rightarrow 1} \frac{1}{x-1}(x^2-1) = 2$$

$$19. \lim_{x \rightarrow 1} \frac{-1}{x-1}(x^2+1) = \pm\infty$$

$$20. \lim_{x \rightarrow 0} \frac{x-1}{x} \frac{x+1}{x} = -\infty$$

$$21. \lim_{x \rightarrow 2} \frac{x+3}{x^2+4} = 5/8$$

$$22. \lim_{x \rightarrow 0} \frac{3x^3+2}{6x^5-1} = -2$$

$$23. \lim_{x \rightarrow 0} \frac{3x^3+2}{6x^5} = \pm\infty$$

$$24. \lim_{x \rightarrow 1} \frac{3x^3+2}{x-1} = \pm\infty$$

$$25. \lim_{x \rightarrow 0} \left[\frac{x+1}{x-1} ; \frac{3x^3+2}{x^3} \right] = 0$$

$$26. \lim_{x \rightarrow 1} \left[\frac{x-1}{x+1} ; \frac{3x^3+2}{x^3} \right] = 0$$

$$27. \lim_{x \rightarrow 1} \frac{x^3-9x^2-x+9}{x^2-1} = -8$$

$$28. \lim_{x \rightarrow 2} \frac{x^2-5x+6}{x^2-8x+15} = 0$$

$$29. \lim_{x \rightarrow 2} \frac{4-x^2}{3-\sqrt{x^2+5}} = 6$$

$$30. \lim_{x \rightarrow -1} \frac{x^3+x^2+x+1}{x^4-1} = -\frac{1}{2}$$

$$31. \lim_{x \rightarrow 2} \frac{x-2}{\sqrt{6-x}-2} = -4$$

$$32. \lim_{x \rightarrow 0} \frac{\sqrt{x^2 + 3x + 4} - 2}{3x} = 1/4$$

$$33. \lim_{x \rightarrow 4} \frac{x^2 - 16}{\sqrt{2x + 1} - 3} = 24$$

$$34. \lim_{x \rightarrow 0} \left[\frac{x}{x-1} : \frac{3x+2}{x^3} \right] = 0$$

$$35. \lim_{x \rightarrow 0} \left[\frac{x+1}{x} : \frac{2}{x^3+1} \right] = \pm\infty$$

$$36. \lim_{x \rightarrow -1} \left[\frac{x+1}{x-1} : \frac{3}{x^2-1} \right] = 0$$

$$37. \lim_{x \rightarrow 0} \left[\frac{-1}{x} : (x+2) \right] = \pm\infty$$

$$38. \lim_{x \rightarrow 0} \left[\frac{-1}{x} : x \right] = -\infty$$

$$39. \lim_{x \rightarrow 5} \left[\frac{1}{x-5} : (x^2 - 25) \right] = +\infty$$

$$40. \lim_{x \rightarrow 0} \left[\frac{-1}{x} : \frac{1}{x^2} \right] = 0$$

$$41. \lim_{x \rightarrow 0} \left[\frac{1}{x^5} : \frac{2}{x^3} \right] = +\infty$$

$$42. \lim_{x \rightarrow 2} \left(\frac{2x-1}{x} \right)^{\frac{1}{x+1}} =$$

$$43. \lim_{x \rightarrow 2} \left(\frac{2x-1}{x} \right)^{\frac{x-2}{x+1}} = 1$$

$$44. \lim_{x \rightarrow -1} \left(\frac{2x-1}{x} \right)^{\frac{1}{(x+1)^2}} = +\infty$$

$$45. \lim_{x \rightarrow -1} \left(\frac{2x-1}{x} \right)^{\frac{1}{x+1}} = \text{por dcha } +\infty$$

por la izqda. 0

$$46. \lim_{x \rightarrow 4} \left(\frac{2x+3}{4x+2} \right)^{\frac{5x}{x-4}} = \text{por dcha } 0,$$

por la izqda. $+\infty$

$$47. \lim_{x \rightarrow 2} \left(\frac{x-2}{x} \right)^{\frac{x+2}{x+1}} = 0$$

$$48. \lim_{x \rightarrow 2} \left(\frac{x-2}{x} \right)^{\frac{x-2}{x+1}} = \text{ind}, 0^0$$

$$49. \lim_{x \rightarrow 0} \left(\frac{x-2}{x} \right)^{\frac{x+2}{x+1}} = +\infty$$

$$50. \lim_{x \rightarrow 0} \left(\frac{x}{x+1} \right)^{\frac{x+2}{x^2}} = 0$$

$$51. \lim_{x \rightarrow 2^+} \left(\frac{x-2}{x} \right)^{\frac{x+2}{2-x}} = +\infty$$

$$52. \lim_{x \rightarrow -1} \left(\frac{x-2}{x} \right)^{\frac{x+2}{x+1}} = \text{por la dcha } +\infty,$$

por la izqda. 0

$$53. \lim_{x \rightarrow 2} \left(\frac{2x-2}{x} \right)^{\frac{x-2}{x+1}} = 1$$

$$54. \lim_{x \rightarrow 1} \left(\frac{x+2}{3} \right)^{\frac{x+2}{x-1}} = 1^\infty = \text{Ind}$$

$$55. \lim_{x \rightarrow 0} \left(\frac{x+2}{x^2} \right)^{\frac{x+2}{x+1}} = +\infty$$

$$56. \lim_{x \rightarrow 0} \left(\frac{x+2}{x^2} \right)^{\frac{x-2}{x+1}} = 0$$

$$57. \lim_{x \rightarrow 2} \left(\frac{x}{(x-2)^2} \right)^{\frac{x-2}{x+1}} = +\infty^0 = \text{Ind}$$

$$58. \lim_{x \rightarrow 2^+} \left(\frac{x}{x-2} \right)^{\frac{-2}{x-2}} = 0$$

$$59. \lim_{x \rightarrow 2^+} \left(\frac{x}{x-2} \right)^{\frac{2}{x-2}} = +\infty$$

$$60. \lim_{x \rightarrow \infty} \frac{2x+1}{4x-2} = 1/2$$

$$61. \lim_{x \rightarrow \infty} \frac{2x^2+1}{4x-2} = \pm\infty$$

$$62. \lim_{x \rightarrow \infty} \frac{2x+1}{4x^3-2} = 0$$

$$63. \lim_{x \rightarrow \infty} \frac{1}{x-2} = 0$$

$$64. \lim_{x \rightarrow \infty} \frac{3x^2-4x}{4x-2x^2} = -3/2$$

$$65. \lim_{x \rightarrow \infty} \frac{x+x^3}{4x^5-1} = 0$$

$$66. \lim_{x \rightarrow \infty} \frac{\sqrt{2x+1}}{4x-2} = 0 \quad x \rightarrow +\infty$$

$$67. \lim_{x \rightarrow \infty} \frac{1}{\sqrt{4x-2}} = 0 \quad x \rightarrow +\infty$$

$$68. \lim_{x \rightarrow \infty} \frac{\sqrt{2x^2+1}}{4x-2} = \pm 1 / \text{raíz cuadrada de } 2$$

$$69. \lim_{x \rightarrow \infty} \frac{\sqrt{2x+1}}{4x-2} = 1 / \text{raíz cuadrada } 2$$

$$70. \lim_{x \rightarrow \infty} \frac{\sqrt{2x^4+1}}{\sqrt[3]{4x^6-2}} =$$

$$71. \lim_{x \rightarrow \infty} \text{sen} \frac{2x+1}{4x-2} = \text{sen} 1/2$$

$$72. \lim_{x \rightarrow \infty} \frac{\text{sen} x}{4x-2} = 0$$

$$73. \lim_{x \rightarrow \infty} \text{Ln} \frac{2x+4x^2}{4x^2-2} = 0$$

$$74. \lim_{x \rightarrow \infty} \frac{1}{\sqrt{2x+1}-\sqrt{x}} = 0$$

$$75. \lim_{x \rightarrow \infty} \frac{(2x-1)^3-8x^3}{2x^2} = -6$$

$$76. \lim_{x \rightarrow \infty} \left(\frac{x^2-5x+2}{x^2+x-7} \right)^{\frac{x^2+5}{x-1}} = 1^\infty =$$

Ind

$$77. \lim_{x \rightarrow \infty} \frac{(x-2)^2-(x+5)^2}{x-2} = -14$$

$$78. \lim_{x \rightarrow \infty} \left(\frac{x+3}{x-2} \right)^{3x+5} = 1^\infty = \text{Ind}$$

$$79. \lim_{x \rightarrow \infty} \left(\frac{x^3}{x^2+1} - \frac{3x^2}{x-3} \right) = \pm\infty$$

$$80. \lim_{x \rightarrow \infty} \left(\frac{3x+1}{3x-7} \right)^{\frac{x^2-1}{x}} = 1^\infty = \text{Ind}$$

$$81. \lim_{x \rightarrow \infty} \left(\frac{x^2+1}{x^2-1} \right)^{\frac{2x^2+3}{x}} = 1^\infty = \text{Ind}$$

$$82. \lim_{x \rightarrow \infty} \left(\frac{2x-1}{x} \right)^{\frac{1}{x+1}} = 1$$

$$83. \lim_{x \rightarrow +\infty} \left(\frac{2x-1}{x^2+1} \right)^{\frac{x^2-1}{x}} = 0$$

