ECUACIONES DE 1º GRADO

1. 2x-34=-20	Sol: x=7	2. 9x+8=7x+6	Sol: x=-1
3. 4x+3=3x+5	Sol: x=2	4. 7x+9=3+9x	Sol: x=3
5. x-8=2x-11	Sol: x=3	6. x+1=2x-7	Sol: x=8
7. 6x+6=4+8x	Sol: x=1	8. 9+9x=17+5x	Sol: x=2
9. 2x+3=3x	Sol: x=3	10. 25-2x=3x+20	Sol: x=1
11. 4x+1=3x+3	Sol: x=2	12. 5x-3=10x-6	Sol: x=3/5
13. 1+8x=-16x+31	Sol: x=5/4	14. 5x-11=15x-19	Sol: x=4/5
15. 12x-48=-15x-30	Sol: x=2/3	16. 2x+17=3x+7	Sol: x=10
17. 10-5x=x-2	Sol: x=2	18. 70-3x=4x	Sol: x=10
19. 48-3x=5x	Sol: x=6	20. -4x+30=-3x-10	Sol: x=40
21. 10x-15=4x+27	Sol: x=7	22. x-3(x-2)=6x-2	Sol: x=1
23. 3x+1=6x-8	Sol: x=3	24. 3x-7=2(x+1)	Sol: x=9
25. 47-3x=5+11x	Sol: x=3	26. 2(2+4x)=3+12x	Sol: x=1/4
27. 30-9x=-7x+21	Sol: x=9/2	28. 5x=7(5x-3)+3	Sol: x=3/5
29. 3x-10=2x+1	Sol: x=11	30. 2(x-5)=3x-17	Sol: x=7
31. 25-2x=3x-35	Sol: x=12	32. 2+5(x-13)=x-3	Sol: x=15
33. 75-5x=3x+3	Sol: x=9	34. 2x-1=3(2x-15)	Sol: x=11
35. 5+8x=2x+20	Sol: x=5/2	36. 2(x-2)=-(4-x)	Sol: x=0
37. 2y-3=y+5	Sol: y=8	38. 2(3x-49)=-x+14	Sol: x=16
39. 2-6x=3x-1	Sol: x=1/3	40. 20=2x-(10-4x)	Sol: x=5
41. 60x-1=3(1+12x)	Sol: x=1/6	42. 5(x-1)+10(x+2)=45	Sol: x=2
43. 2x+3(2x-1)=x+67	Sol: x=10	44. 12x+3(2x-4)=60	Sol: x=4
45. 3-2x(5-2x)=4x²+x-30	Sol: x=3	46. 3x-(x+1)=x-2	Sol: x=-1
47. 3[2x-(3x+1)]=x+1	Sol: x=-1	48. x-3(x+5)=3x+10	Sol: x=-5
49. (x-15)=3(x-19)	Sol: x=21	50. 3(2-x)=18x-1	Sol: x=1/3
51. 3(x+4)=4x+1	Sol: x=11	52. 10+5(x-3)=3(x+1)	Sol: x=4
53. 2(3-4x)=2x-9	Sol: x=3/2	54. 10-9x=4(x-4)	Sol: x=2
55. 2(3x+2)=4[2x-5(x-2)]	Sol: x=2	56. 15x=2(1+9x)-3	Sol: x=1/3
57. 3(12-x)-4x=2(11-x)+9x	Sol: x=1	58. x+3=3(2x-4)	Sol: x=3

59. $\dfrac{3x}{2} + 2 = x + 4$

60. $x - 8 = \dfrac{x}{2} - \dfrac{x-6}{3}$

61. $x - \dfrac{3x}{4} = \dfrac{x}{7} + 3$

62. $2\left(\dfrac{x+5}{3}\right) = x + 3$

63. $\dfrac{9x}{4} - 6 = \dfrac{2x}{3} + \dfrac{1}{3}$

64. $\dfrac{5x}{6} - \dfrac{3x}{4} = x - 11$

65. $\dfrac{3x}{5} - 7 = \dfrac{2x}{6} + 1$

66. $x - 10 = \dfrac{5}{9}(x - 6)$

67. $\dfrac{x}{3} + x = 10 + \dfrac{2x}{9}$

68. $\dfrac{3x}{2} + 1 = 12 - \dfrac{x}{3}$

69. $\dfrac{x}{5} + \dfrac{x}{2} = x - 3$

70. $4x - 7 = \dfrac{5x - 6}{4}$

71. $\dfrac{x+2}{3} = 5x - 4$

72. $\dfrac{2x-10}{3x-20} = \dfrac{7}{8}$

73. $\dfrac{x}{4} + \dfrac{3x}{6} + x = 21$

74. $\dfrac{x}{4} - \dfrac{13}{6} = \dfrac{5x}{2} - \dfrac{5}{6}$

75. $\dfrac{x}{3} + \dfrac{x}{4} + \dfrac{x}{5} = 94$

76. $\dfrac{x}{3} + 10 = \dfrac{x}{5} + 16$

77. $\dfrac{x-7}{x+3} = \dfrac{10}{x+3} - 3$

78. $3x - 9 + \dfrac{x}{5} = 2x - 3$

79. $\dfrac{\frac{3x}{5} - 12}{x+1} = 6$

80. $\dfrac{x}{4} + 5 = \dfrac{2x}{5} - 2 - \dfrac{x}{30}$

81. $\dfrac{3}{x+1} = \dfrac{x}{x-1} - 1$

82. $\dfrac{5x}{8} - 5\,(x-20) = \dfrac{-2x+18}{6}$

83. $x + \dfrac{x+1}{5} = x + \dfrac{x}{2}$

84. $3x - \dfrac{7-x}{8} = -1 + \dfrac{x-3}{4} + 2x$

85. $8 - \dfrac{3x}{10} + \dfrac{2x}{4} - \dfrac{5x}{8} = -9$

86. $\dfrac{x+1}{2} + \dfrac{3+x}{6} = 1 + \dfrac{x}{3}$

87. $\dfrac{3x}{5} - 2 + \dfrac{3x}{2} - \dfrac{x}{10} = 0$

88. $\dfrac{10}{x+5} + \dfrac{3+4x}{x+5} = 3$

89. $\dfrac{x+2}{x-1} - \dfrac{x+3}{x+1} = \dfrac{2x+2}{x^2-1}$

90. $\dfrac{7x-3}{6} - \dfrac{3x-1}{4} = \dfrac{5x-1}{4}$

91. $\dfrac{4x-3}{6} - \dfrac{3x-1}{4} = \dfrac{4x-2}{3} - 1$

92. $\dfrac{3\,(x+1)}{4} - \dfrac{x+3}{6} + x = 2x + \dfrac{3-7x}{12}$

93. $\dfrac{2x}{5} - 2 - \dfrac{x}{3} = \dfrac{x}{10} - 3$

94. $\dfrac{15}{x+10} - \dfrac{5}{x+2} = 0$

95. $\dfrac{2}{x+1} + \dfrac{3x-3}{x^2-1} = \dfrac{2}{x-1} + \dfrac{7}{x+1}$

96. $\dfrac{2x+1}{4} - \dfrac{3x}{9} - 2 = \dfrac{3x-2}{4}$

97. $\dfrac{5}{x-1} - \dfrac{3}{x+4} - \dfrac{3}{x^2+3x-4} = \dfrac{5}{x-1}$

98. $\dfrac{15}{x-2} - \dfrac{12x+6}{x^2-4} = \dfrac{18}{x+2}$

99. $(a+x)\,(b-x) - a\,(b+a) + x^2 + a^2 = \dfrac{b^2 - ab}{a}$

100. $\dfrac{1}{x-a} + \dfrac{1}{x+a} = \dfrac{1}{x^2-a^2}$

101. $\dfrac{x}{2a} - 2 = \dfrac{1+x}{2}$

102. $\dfrac{1 + \dfrac{x+1}{x-1}}{2 - \dfrac{x-1}{x+1}} = 2$

103. $\dfrac{x}{3} + \dfrac{x-5}{2} - \dfrac{1}{4}x = \dfrac{5x-2}{2}$

104. $\dfrac{x-3}{3} - \dfrac{3\,(x-2)}{2} = \dfrac{x-3-(x+2)}{2}$

105. $\dfrac{x-3}{5} - \dfrac{x-3}{2} = \dfrac{x-3}{3} - \dfrac{x+3}{2}$

106. $\dfrac{x+1}{2} + \dfrac{5+x}{6} = 1 + \dfrac{9-2x}{3}$

107. $x\,(x-2) - \dfrac{x+2}{3} - \dfrac{x-2}{2} = (x-2)^2 - 4$

108. $x\,(x-2) - \dfrac{x+2}{3} - \dfrac{x-2}{2} = (x-2)^2 - 4x$

109. $\dfrac{x^2-2x+1}{x\,(x+1)\,(x-1)} = \dfrac{3}{2x}$

Sol: 59. x=4; 60. x=12; 61. x=28; 62. x=1; 63. x=4; 64. x=12; 65. x=30; 66. x=15; 67. x=9; 68. x=6; 69. x= 10; 70. x=2; 71. x=1; 72. x=12; 73. x=12; 74. x=-16/27; 75. x=120; 76. x=45; 77. x= 2; 78. x=5; 79. x=5; 80. x=60; 81. x=2; 82. x=24; 83. x=2/3; 84. x=-1; 85. x=40; 86. x=0; 87. x=1; 88. x=2; 89. x=3; 90. x=0; 91. x=1; 92. x=0; 93. x=30; 94. x=2; 95. x=0; 96. x=-15/7; 97. x=0; 98. x=4; 99. x=b/a; 100. x=1/2; 101. x=5a/(1-a); 102. x=3; 103. x=-18/23; 104. x=27/7; 105. x=51/2; 106. x=2; 107. x=-2/7; 108. x=22/31; 109. x=-5

ECUACIONES DE 2º GRADO

110. $x^2-7x+12=0$	Sol: x=3; x=4	111. $x^2-9x+18=0$	Sol: x=3; x=6
112. $x^2-5x+6=0$	Sol: x=2; x=3	113. $x^2+8x+15=0$	Sol: x=-5; x=-3
114. $x^2-6x-27=0$	Sol: x=-3; x=9	115. $x^2-6x+9=0$	Sol: x=3
116. $x^2+6x=-9$	Sol: x=-3	117. $4x^2+4x=3$	Sol:x=1/2;x=-3/2
118. $x^2-9x+14=0$	Sol: x=2; x=7	119. $x^2-6x+8=0$	Sol: x=4; x=2
120. $2x^2+10x-48=0$	Sol: x=3; x=-8	121. $x^2-x=20$	Sol: x=-4; x=5
122. $x^2=5x+6$	Sol: x=6; x=-1	123. $2x^2-5x+3=0$	Sol: x=1; x=3/2
124. $x^2+10x+25=0$	Sol: x=-5	125. $x^2+9=10x$	Sol: x=1; x=9
126. $3x^2-39x+108=0$	Sol: x=4; x=9	127. $2x^2-9x+9=0$	Sol: x=3; x=3/2
128. $3x^2+2x=8$	Sol: x=-2; x=4/3	129. $4x^2+12x+9=0$	Sol: x=-3/2
130. $5x^2+1=6x$	Sol: x=1; x=1/5	131. $6x^2+1=5x$	Sol:x=1/2; x=1/3
132. $6x^2-6=5x$	Sol: x=-2/3; x=3/2	133. $2x^2+7x+6=0$	Sol: x=-2; x=-3/2
134. $x^2=2x+3$	Sol: x=-1; x=3	135. $4x^2+3=8x$	Sol:x=1/2; x=3/2
136. $x^2-x+1/4=0$	Sol: x=1/2	137. $3x^2-16x+5=0$	Sol: x=5; x=1/3

138. $1 - \dfrac{x^2}{3} - \dfrac{3x+2}{3} = 1$

139. $\dfrac{(x-3)^2}{2} - x + x^2 = x - (x-2)$

140. $\dfrac{1}{x-1} + 3x + 3x^2 - 2 = \dfrac{3}{x-1} + 3x^2$

141. $(x-3)^2 - \dfrac{x-1}{3} = 2x$

142. $\dfrac{x-3}{3} - \dfrac{1}{x-1} = 3x$

143. $x - \dfrac{2}{x} + \dfrac{1}{2x} = 5x + 5$

144. $\dfrac{x-3}{x} + 3x - \dfrac{5}{x} = 2x - \dfrac{3}{x} - 3$

145. $3x - \dfrac{8}{x} + (x-1)^2 = 3(x-2)-(x-5)$

146. $(x-3)(x-2) + \dfrac{x(x-3)}{2} = (x-2)^2$

147. $(x-2)\,x - \dfrac{x+2}{3} - \dfrac{(x-2)(x+2)}{2} = (x-2)^2 - 4$

148. $(x-3)^2 - \dfrac{x-2}{3} + (3-x)(x-1) = (x-2)^2$

149. $\dfrac{x-1}{x+1} - \dfrac{3+x}{x} = 2$

150. $\dfrac{x-1}{x+1} - \dfrac{3+x}{x-1} = 2$

151. $x + \dfrac{1}{x-2} = 4$

152. $x^2 - x = \dfrac{2}{9} - \dfrac{2x}{3}$

153. $\dfrac{x^2}{3} + 2 = \dfrac{5x}{3}$

154. $x + \dfrac{2}{x} = 3$

155. $x - 2 = \dfrac{4x-8}{x}$

156. $\dfrac{x}{2} + \dfrac{3}{x} = \dfrac{2x+9}{x}$

157. $2x - 2 = \dfrac{6x}{x-1} - 5$

158. $x(x+1) - \left(x + \dfrac{x}{2}\right) = 0$

159. $3x + 1 - \dfrac{3}{x} = \dfrac{1+3x}{4}$

160. $2 + \dfrac{x+4}{3} = \dfrac{4x+4}{3} + \dfrac{2-x}{x-3}$

161. $x + \dfrac{1}{x} = \dfrac{6}{3x}$

162. $x - 2 = \dfrac{2x-3}{x}$

163. $\dfrac{x}{3} + \dfrac{2}{x} = \dfrac{3x+10}{3x}$

164. $x + 3 = \dfrac{2x+1}{x-1}$

165. $\dfrac{3}{x + \dfrac{1}{2 + \dfrac{x+1}{x-2}}} = \dfrac{1}{x}$

166. $\dfrac{\dfrac{x-3}{2} - \dfrac{x-3}{4}}{x - \dfrac{1}{1 - \dfrac{x-1}{x+1}}} = -\dfrac{1}{x}$

Soluciones: 138. x=-2, x=-1;   139. x=1, x=5/3;   140. x=5/3, x=0;   141. x=4/3, x=7;
142. x=5/8, x=0;   143. x=-3/4, x=-1/2;   144. x=-5, x=1;   145. x=-2, x=2;   146. x=1, x=4;
147. x=-2/3, x=4;   148. x=-1, x=8/3;   149. x=-3, x=-1/2;   150. x=-3, x=0;   151. x=3;
152. x=-1/3, x=2/3;   153. x=2, x=3;   154. x=1, x=2;   155. x=4, x=2;   156. x=-2, x=6;
157. x=-1/2, x=3;   158. x=0, x=1/2;   159. x=1, x=-4/3;   160. x=2, x=4;   161. x=1, x=-1;
162. x=3, x=1;   163. x=-1, x=4;   164. x=-2, x=2;   165. x=1/2, x=2/3;   166. x=-1; x=2

ECUACIONES IRRACIONALES

1. $x + \sqrt{x} = 30$ 2. $\sqrt{x} + 1 = \sqrt{x+9}$ 3. $\sqrt{7-3x} - x = 7$

4. $\sqrt{x+4} = 3 - \sqrt{x-1}$ 5. $5\sqrt{x} + 3 = 2x$ 6. $3\sqrt{6x+1} - 5 = 2x$

7. $\sqrt{4x+5} - \sqrt{3x+1} = 1$ 8. $\sqrt{2x-1} + \sqrt{x+4} = 6$ 9. $1 + \sqrt{x+1} = \dfrac{x}{3}$

10. $\sqrt{x^3} - 2\sqrt{x} = \sqrt{x}$ 11. $\sqrt{x-3} + \sqrt{x+4} = \sqrt{4x+1}$

12. $2\sqrt{x+4} = \sqrt{5x+4}$ 13. $\sqrt{x^2+3x+7} = 5$ 14. $3 - \sqrt{x} = x + 1$

15. $2\sqrt{2x-1} = \sqrt{6x-5} + \sqrt{2x-9}$ 16. $\sqrt{2x+5} + 6 = 3x + 3$

17. $\sqrt{3x+10} = 1 + \sqrt{3x+3}$ 18. $\sqrt{3x-2} - 4 = 0$ 19. $\sqrt{2x+1} = x - 1$

20. $\sqrt{2x-1} + \sqrt{2x+1} = \dfrac{1}{\sqrt{2x-1}}$ 21. $\dfrac{21}{\sqrt{6x+1}} - \sqrt{6x+1} = 2\sqrt{3x}$

22. $\dfrac{3}{\sqrt{x}} = \dfrac{6}{\sqrt{3x+4}}$ 23. $\sqrt{2} + \sqrt{\dfrac{2^3}{x}} = \sqrt{2x}$

24. $\sqrt{x+6} + \sqrt{x+11} = \sqrt{5-10x}$ 25. $\sqrt{9\sqrt{15-x}} = 6\sqrt{2x+3}$

Soluciones   (OJO!! COMPROBAR SOLUCIONES):
1. x=25, x=36; 2. x=16; 3. x=-3, x=-14; 4. x=13/9;
5. x=9, x=1/4; 6. x=8, x=1/2; 7. x=5, x=1; 8. x=5, x=221;
9. x=15, x=0; 10. x=0, x=→3; 11. x=12; 12. x=12;
13. x=3, x=-6; 14. x=1, x=4; 15. x=5; 16. x=2/9, x=2;
17. x=2; 18. x=6; 19. x=4, x=0; 20. x=5/8;
21. x=4/3; 22. x=4; 23. x=4, x=1; 24. x=-2, x=3/7;
25. x=-1

ECUACIONES BICUADRADAS Y BICÚBICAS

1. $x^4-5x^2+4=0$ 2. $x^4+2x^2-3=0$ 3. $x^6-9x^3+8=0$
4. $x^6-26x^3-27=0$ 5. $6x^4+2x^2-8=0$ 6. $x^4-4x^2=0$
7. $4x^4-17x^2+4=0$ 8. $9x^4-3x^2+4=0$ 9. $x^4-6x^2-27=0$
10. $x^6+7x^3-8=0$ 11. $x^4-2x^2-8=0$ 12. $x^6+28x^3+27=0$

Soluciones:
1. x=→1, x=→2; 2. x=→1; 3. x=2, x=1; 4. x=-1, x=3;
5. x=→1; 6. x=0, x=→2; 7. x=→2, x=→1/2 8. x=→1/3, x=→2
9. x=→3 10. x=1, x=-2 11. x=→2 12. x=-1, x=-3

ECUACIONES DE GRADO SUPERIOR A DOS

1. $x^3-7x^2+7x+15=0$ 2. $x^3-2x^2-x+2=0$ 3. $x^4+x^3-16x^2-4x+48=0$
4. $3x^4-2x^3-3x^2+2x=0$ 5. $x^3-2x^2-5x+6=0$ 6. $4x^3+4x^2-x-1=0$
7. $6x^4+x^3-7x^2-x+1=0$ 8. $4x^4-x^3-28x^2+31x-6=0$ 9. $(4x^2-9)(9x^2-16)=0$
10. $x^3-4x=0$ 11. $x^4-11x^3-+41x^2-61x+30=0$ 12. $12x^3-x^2-x=0$

Soluciones: 1. –1,3,5 2. –1,1,2 3. –2,2,3,-4 4. 0,-1,1,2/3 5. 1,-2,3 6. –1,-1/2,1/2
7. –1,1,-1/2,1/3 8. –3,1,2,5/2 9. 3/2,-3/2,4/3,-4/3 10. 0,4 11. 1,2,3,5 12. 0, 1/3, –1/4