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. $3-2x(5-2x)=4x^2+x-30$ 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. $\frac{3x}{2}+2=x+4$
60. $x-8=\frac{x}{2}-\frac{x-6}{3}$
61. $x-\frac{3x}{4}=\frac{x}{7}+3$
62. $2\left(\frac{x+5}{3}\right)=x+3$
63. $\frac{9x}{4}-6=\frac{2x}{3}+\frac{1}{3}$
64. $\frac{5x}{6}-\frac{3x}{4}=x-11$
65. $\frac{3x}{5}-7=\frac{2x}{6}+1$
66. $x-10=\frac{5}{9}(x-6)$
67. $\frac{x}{3}+x=10+\frac{2x}{9}$
68. $\frac{3x}{2}+1=12-\frac{x}{3}$
69. $\frac{x}{5}+\frac{x}{2}=x-3$
70. $4x-7=\frac{5x-6}{4}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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. $1 + \sqrt{x+1} = \frac{x}{3}$
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. $\sqrt{2x-1} + \sqrt{2x+1} = \frac{1}{\sqrt{2x-1}}$
21. $\frac{21}{\sqrt{6x+1}} - \sqrt{6x+1} = 2\sqrt{3x}$
22. $\frac{3}{\sqrt{x}} = \frac{6}{\sqrt{3x+4}}$
23. $\sqrt{2} + \sqrt{\frac{2^3}{x}} = \sqrt{2x}$
24. $\sqrt{x+6} + \sqrt{x+11} = \sqrt{5-10x}$
25. $\sqrt{9\sqrt{15-x}} = 6\sqrt{2x+3}$

Soluciones:

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