Guía Nº 28

ECUACIONES DE SEGUNDO GRADO

1.- Resolver

1. $3x^2-5x+2=0$.
2. $4x^2+3x-22=0$.
3. $x^2+11x=-24$.
4. $x^2=16x-63$.
5. $12x-4-9x^2=0$.
6. $5x^2-7x-90=0$.
7. $6x^2=x+222$.
8. $x+11=10x^2$.
9. $49x^2-70x+25=0$.
10. $12x-7x^2+64=0$.
11. $x^2=-15x-56$.
12. $32x^2+18x-17=0$.
13. $176x=121+64x^2$.
14. $8x+5=36x^2$.
15. $27x^2+12x-7=0$.
16. $15x=25x^2+2$.
17. $8x^2-2x-3=0$.
18. $105=x+2x^2$.

2.- Resolver:

1. $x(x+3)=5x+3$.
2. $3(3x-2)=(x+4)(4-x)$.
3. $9x+1=3(x^2-5)-(x-3)(x+2)$.
4. $(2x-3)^2-(x+5)^2=-23$.
5. $25(x+2)^2=(x-7)^2-81$.
6. $3x(x-2)-(x-6)=23(x-3)$.
7. $7(x-3)-5(x^2-1)=x^2-5(x+2)$.
8. $(x-5)^2-(x-6)^2=(2x-3)^2-118$.
9. $(5x-2)^2-(3x+1)^2-x^2-60=0$.
10. $(x+4)^3-(x-3)^3=343$.
11. $(x+2)^3-(x-1)^3=x(3x+4)+8$.
12. $(5x-4)^2-(3x+5)(2x-1)=20x(x-2)+27$.

3.- Resolver las siguientes ecuaciones:

1. $\frac{x^2}{5}-\frac{x}{2}=\frac{3}{10}$.
2. $4x-\frac{13}{x}=\frac{3}{2}$.
3. $\frac{x^2}{6}-\frac{x}{2}=3(x-5)$.
4. $\frac{1}{4}(x-4)+\frac{2}{5}(x-5)=\frac{1}{5}(x^2-53)$.
5. $\frac{5}{x}-\frac{1}{x+2}=1$.
6. $\frac{15}{x}-\frac{11x+5}{x^2}=-1$.
7. $\frac{8x}{3x+5}+\frac{5x-1}{x+1}=3$.
8. $\frac{1}{x-2}-\frac{1}{x-1}=\frac{1}{6}$.
9. $1-\frac{2x-3}{x+5}=\frac{x-2}{10}$.
10. $\frac{x-13}{x}=5-\frac{10(5x+3)}{x^2}$.
11. $\frac{x}{x-2}-\frac{x-2}{x}=\frac{5}{2}$.
12. $\frac{4x^2}{x-1}-\frac{1-3x}{4}=\frac{20x}{3}$.
13. $\frac{3x-1}{x}-\frac{2x}{2x-1}-\frac{7}{6}=0$.
14. $\frac{5x-8}{x-1}=\frac{7x-4}{x+2}$.
15. $\frac{x+3}{2x-1}-\frac{5x-1}{4x+7}=0$.
16. $\frac{1}{4-x}-\frac{1}{6}=\frac{1}{x+1}$.
17. $\frac{x+4}{x+5}-\frac{x+2}{x+3}=\frac{1}{24}$.
18. $\frac{5}{x^2-1}-\frac{6}{x+1}=3\frac{5}{8}$.
19. $\frac{x-1}{x+1}+\frac{x+1}{x-1}=\frac{2x+9}{x+3}$.
20. $\frac{3}{x+2}-\frac{1}{x-2}=\frac{1}{x+1}$.

4.-Resolver por descomposición en factores:

1. $x^2-x-6=0$.
2. $x^2+7x=18$.
3. $8x-65=-x^2$.
4. $x^2=108-3x$.
5. $2x^2+7x-4=0$.
6. $6x^2=10-11x$.
7. $20x^2-27x=14$.
8. $7x=15-30x^2$.
9. $60=8x^2+157x$.
10. $x(x-1)-5(x-2)=2$.
11. $(x-2)^2-(2x+3)^2=-80$.
12. $\frac{6}{x^2}-\frac{9}{x}=-\frac{4}{3}$.
13. $\frac{x+2}{x}+x=\frac{74}{x}$.
14. $(x+2)^2-\frac{2x-5}{3}=3$.
15. $\frac{x}{x-2}+x=\frac{3x+15}{4}$.
16. $\frac{6}{x-4}-\frac{4}{x}=\frac{5}{12}$.
17. $(x-2)^3-(x-3)^3=37$.
18. $\frac{x-1}{x+1}-2=\frac{x+3}{3}$.
19. $\frac{4x-1}{2x+3}=\frac{2x+1}{6x+5}$.
20. $\frac{3x+2}{4}=5-\frac{9x+14}{12x}$.

5.-Resolver las ecuaciones

1. $x+\sqrt{4x+1}=5$.
2. $2x-\sqrt{x-1}=3x-7$.
3. $\sqrt{5x-1}+\sqrt{x+3}=4$.
4. $2\sqrt{x}-\sqrt{x+5}=1$.
5. $\sqrt{2x-1}+\sqrt{x+3}=3$.
6. $\sqrt{x-3}+\sqrt{2x+1}-2\sqrt{x}=0$
7. $\sqrt{5x-1}-\sqrt{3-x}=\sqrt{2x}$.
8. $\sqrt{3x+1}+\sqrt{5x}=\sqrt{16x+1}$.
9. $\sqrt{2x+\sqrt{4x-3}}=3$.
10. $\sqrt{x+3}+\frac{6}{\sqrt{x+3}}=5$.
11. $\sqrt{x}+\frac{4}{\sqrt{x}}=5$.
12. $2\sqrt{x}=\sqrt{x+7}+\frac{8}{\sqrt{x+7}}$.
13. $\sqrt{x+\sqrt{x+8}}=2\sqrt{x}$.
14. $\sqrt{6-x}+\sqrt{x+7}-\sqrt{12x+1}=0$.

Respuestas

EJERCICIO 1 1. 1, $\frac{2}{3}$. 2. 2, $-\frac{11}{4}$. 3. -3, -8. 4. 7, 9. 5. $\frac{2}{3}$. 6. 5, $-3\frac{3}{5}$.
7. -6, $6\frac{1}{6}$. 8. -1, $1\frac{1}{10}$. 9. $\frac{5}{7}$. 10. 4, $-2\frac{2}{7}$. 11. -7, -8. 12. $\frac{1}{2}$, $-1\frac{1}{16}$. 13. $1\frac{3}{8}$.
14. $\frac{1}{2}$, $-\frac{5}{18}$. 15. $\frac{1}{3}$, $-\frac{7}{9}$. 16. $\frac{1}{5}$, $\frac{2}{5}$. 17. $\frac{3}{4}$, $-\frac{1}{2}$. 18. 7, $-7\frac{1}{2}$.

EJERCICIO 2 1. 3, -1. 2. 2, -11. 3. -1, 5. 4. 7, $\frac{1}{3}$. 5. -2, $-2\frac{3}{4}$. 6. 5.
7. 1. 8. 7, $-3\frac{1}{2}$. 9. 3, $-1\frac{4}{15}$. 10. 3, -4. 11. $-\frac{1}{2}$, $-\frac{1}{3}$. 12. -1, -6.

EJERCICIO 3 1. 3, $-\frac{1}{2}$. 2. 2, $-1\frac{5}{8}$. 3. 6, 15. 4. 8, $-4\frac{3}{4}$.
5. $1+\sqrt{11}$, $1-\sqrt{11}$. 6. 1, -5. 7. 1, $-1\frac{3}{7}$. 8. 4, -1. 9. 5, -18.
10. 10, $-\frac{3}{4}$. 11. $\frac{9+\sqrt{41}}{5}$, $\frac{9-\sqrt{41}}{5}$. 12. 3, $-\frac{1}{23}$. 13. 2, $\frac{3}{10}$. 14. 4, $2\frac{1}{2}$.
15. 5, $-\frac{2}{3}$. 16. 2, -11. 17. 3, -11. 18. -3, $1\frac{10}{29}$. 19 3, $-1\frac{2}{3}$.
20. $3+\sqrt{13}$, $3-\sqrt{13}$.

EJERCICIO 4 1. 3, -2. 2. 2, -9. 3. 5, -13. 4. 9, -12. 5. -4, $\frac{1}{2}$.
6. $\frac{2}{3}$, $-2\frac{1}{2}$. 7. $1\frac{3}{4}$, $-\frac{2}{5}$. 8. $\frac{3}{5}$, $-\frac{5}{6}$. 9. -20, $\frac{3}{8}$. 10. 2, 4. 11. 3, $-8\frac{1}{3}$.
12. 6, $\frac{3}{4}$. 13. 8, -9. 14. -2, $-1\frac{1}{3}$. 15. 3, 10. 16. 12, $-3\frac{1}{5}$. 17. 6, -1.
18. -3, -4. 19. $\frac{1}{2}$, $-\frac{4}{5}$. 20. $\frac{1}{3}$, $4\frac{2}{3}$.

EJERCICIO 5 1. 2. 2. 5. 3. 1. 4. 4. 5. 1. 6. 4. 7. 2.
8. 0, 5. 9. 3. 10. 1, 6. 11. 1, 16. 12. 9. 13. 1. 14. 2.