

Resolver las ecuaciones:

1. $\log x + \log 50 = \log 1000$

2. $2 \log x^3 = \log 8 + 3 \log x$

Solución:

1. $\log x + \log 50 = \log 1000$

$$\log(50x) = \log 1000$$

$$50x = 1000$$

$$x = \frac{1000}{50} = 20$$

2. $2 \log x^3 = \log 8 + 3 \log x$

$$6 \log x = \log 8 + 3 \log x$$

$$6 \log x - 3 \log x = \log 8$$

$$3 \log x = \log 8$$

$$\log x^3 = \log 2^3$$

$$x^3 = 2^3$$

$$x = 2$$

Resolver las ecuaciones:

1. $3 \log x + 2 \log x^2 = \log 128$

2. $3 \log x^2 = 4 + 4 \log x$

Solución:

1. $3 \log x + 2 \log x^2 = \log 128$

$$3 \log x + 4 \log x = \log 128$$

$$7 \log x = \log 128$$

$$\log x^7 = \log 2^7$$

$$x^7 = 2^7$$

$$x = 2$$

2. $3 \log x^2 = 4 + 4 \log x$

$$6 \log x - 4 \log x = 4$$

$$2 \log x = 4$$

$$\log x = 2$$

$$\log x = \log 10^2$$

$$x = 10^2 = 100$$

Halla las soluciones de:

$$\log(3x^2 - 2) = 1 + \log(x - 1)$$

Solución:

$$\log(3x^2 - 2) = \log 10 + \log(x - 1)$$

$$\log(3x^2 - 2) = \log 10(x - 1)$$

$$3x^2 - 2 = 10(x - 1)$$

$$3x^2 - 10x + 8 = 0 \implies x = \frac{10 \pm \sqrt{100 - 96}}{6}$$

$$x = \frac{10 \pm 2}{6} \implies x = 2, \quad x = \frac{4}{3}$$

Halla las soluciones de:

$$\log(x^2 + 6x + 7) = 1 + \log(x + 1)$$

Solución:

$$\log(x^2 + 6x + 7) = \log 10 + \log(x + 1)$$

$$\log(x^2 + 6x + 7) = \log 10(x + 1)$$

$$x^2 + 6x + 7 = 10(x + 1)$$

$$x^2 - 4x - 3 = 0 \implies x = 3, \quad x = 1$$

Hallar las soluciones reales de:

Solución: $\log(3x^2 - 2) = 1 + \log(x - 1)$

$$\log(3x^2 - 2) = 1 + \log(x - 1) \implies \log(3x^2 - 2) = \log 10 + \log(x - 1) \implies$$

$$\log(3x^2 - 2) = \log 10(x - 1) \implies (3x^2 - 2) = 10(x - 1) \implies 3x^2 - 10x + 8 = 0$$

$$\implies \begin{cases} x = 2 \\ x = \frac{4}{3} \end{cases}$$

Hallar las soluciones reales de: $\log(x^2 + 2699) = 2 + \log(x + 2)$

Solución:

$$\log(x^2 + 2699) = 2 + \lg(x + 2) \implies \log(x^2 + 2699) = \log 100 + \log(x + 2) \implies$$

$$\log(x^2 + 2699) = \log 100(x + 2) \implies (x^2 + 2699) = 100(x + 2) \implies$$

$$x^2 - 100x + 2499 = 0 \implies \begin{cases} x = 51 \\ x = 49 \end{cases}$$

Calcular $\log(x^2 - 1) + 2 = 1 + 2\log(x + 1)$

Solución:

$$\log(x^2 - 1) + 2 = 1 + 2\log(x + 1) \implies \log(x^2 - 1) + 1 = 2\lg(x + 1) \implies$$

$$\lg 10(x^2 - 1) = \lg(x + 1)^2 \implies 10(x^2 - 1) = (x + 1)^2 \implies 9x^2 - 2x - 11 = 0$$

$$\implies \begin{cases} x = -1 \\ x = \frac{11}{9} \end{cases} \quad \text{La solución } x = -1 \text{ no es válida.}$$

Resolver la siguiente ecuación: $\log(1 + x^2) - 1 = \log(x - 2)$

Solución:

$$\log(1 + x^2) - 1 = \log(x - 2) \implies \log(1 + x^2) - \log 10 = \log(x - 2) \implies$$

$$\log\left(\frac{1 + x^2}{10}\right) = \log(x - 2)$$

$$\frac{1 + x^2}{10} = x - 2 \implies 1 + x^2 = 10x - 20 \implies x^2 - 10x + 21 = 0 \implies$$

$$x = 7, \quad x = 3$$

Resolver las ecuaciones:

1. $\log \frac{10}{x} = 2 - 2\log x$

2. $3\log x - 2 = 2\log x$

Solución:

1. $\log 10 - \log x = 2 - 2\log x$

2. $3\log x - 2 = 2\log x$

$$1 - \log x = 2 - 2\log x$$

$$3\log x - 2\log x = 2$$

$$2\log x - \log x = 2 - 1$$

$$\log x = 2 \implies x = 10^2 = 100$$

$$\log x = 1 \implies x = 10$$

Resolver las ecuaciones:

1. $\log 10(x + 2) - \log(x^2) = 1$

2. $\log x + \log x^2 = 3$

Solución:

1. $\log \frac{10(x + 2)}{x^2} = \log 10$

2. $\log x + 2\log x = 3$

$$\frac{10(x + 2)}{x^2} = 10$$

$$3\log x = 3$$

$$\log x = 1 \implies x = 10$$

$$10x + 20 = 10x^2$$

$$x^2 - x - 2 = 0 \implies x = 2, \quad x = -1$$

Resolver $\log(3x + 1) - 2 \log x = 2$

Solución: $\log\left(\frac{3x+1}{x^2}\right) = \log 100 \implies 100x^2 - 3x - 1 = 0 \implies$

$$\begin{cases} x = 0,116187 \\ x = -0,0861187 \text{ No Vale} \end{cases}$$

Resolver $\log(2x + 1) - 2 \log x = 1$

Solución: $\log\left(\frac{2x+1}{x^2}\right) = \log 10 \implies 10x^2 - 2x - 1 = 0 \implies$

$$\begin{cases} x = 0,43166 \\ x = -0,23166 \text{ No Vale} \end{cases}$$

Resolver $2 \log(x + 1) - \log x = 1$

Solución: $\log\left(\frac{(x+1)^2}{x}\right) = \log 10 \implies x^2 - 8x + 1 = 0 \implies$

$$\begin{cases} x = 0,127 \\ x = 7,873 \end{cases}$$

Resolver $\log x - \log(1 - x) = 2$

Solución: $\log\left(\frac{x}{1-x}\right) = \log 100 \implies 101x = 100 \implies x = \frac{100}{101}$

Resolver $\log(x + 1) - \log(x^2 - 1) = 1$

Solución:

$$\log\left(\frac{x+1}{x^2-1}\right) = \log 10 \implies 10x^2 - x - 11 = 0 \implies \begin{cases} x = 1,1 \\ x = -1 \text{ No Vale} \end{cases}$$

Resolver $\log x - \log(1 - x) = 2$

Solución:

$$\log\left(\frac{x}{1-x}\right) = \log 100 \implies 101x = 100 \implies x = \frac{100}{101}$$

Resolver las ecuaciones:

1. $\log x^2 - \log(x - 1) + 1 = 2 \log x$ 2. $\log(x + 1) - 2 \log(x - 1) = 1$

Solución:

1. $\log x^2 - \log(x - 1) + 1 = 2 \log x \implies \log \frac{10x^2}{x-1} = \log x^2 \implies$

$$x^2(11 - x) = 0 \implies x = 11 \text{ y } x = 0 \text{ (no vale).}$$

2. $\log(x + 1) - 2 \log(x - 1) = 1 \implies \log \frac{x+1}{(x-1)^2} = \log 10 \implies$

$$10x^2 - 21x + 9 = 0 \implies x = \frac{3}{2} \text{ y } x = \frac{3}{5} \text{ no vale}$$

Resolver las ecuaciones:

1. $\log(10x^2 - 2) - 1 = \log(x + 1) + \log x$ 2. $\log(3x^2 - 2) - 2 \log(1 - x) = 1$

Solución:

$$1. \log(10x^2 - 2) - 1 = \log(x + 1) + \log x \implies \log \frac{10x^2 - 2}{10} = \log x(x + 1)$$

$$\implies 10x^2 - 2 = 10x(x + 1) \implies x = -\frac{1}{5}$$

$$2. \log(3x^2 - 2) - 2\log(1 - x) = 1 \implies \log \frac{3x^2 - 2}{(1 - x)^2} = \log 10 \implies$$

$$7x^2 - 20x + 12 = 0 \implies x = \frac{6}{7}, \quad x = 2 \text{ (no vale)}$$

Resolver las ecuaciones:

$$1. 2\log(x - 1) + 1 = \log(x^2 - 1)$$

$$2. \log(10(x^3 + 2x)) - 2\log(x + 1) = 1 + \log x$$

Solución:

$$1. 2\log(x - 1) + 1 = \log(x^2 - 1) \implies \log 10(x - 1)^2 = \log(x^2 - 1)$$

$$\implies 9x^2 - 20x + 11 = 0 \implies x = \frac{11}{9} \text{ y } x = 1 \text{ (no vale).}$$

$$2. \log(10(x^3 + 2x)) - 2\log(x + 1) = 1 + \log x \implies$$

$$\log \frac{10(x^3 + 2x)}{(x + 1)^2} = \log 10x \implies 2x^2 - x = 0 \implies$$

$$x = \frac{1}{2} \text{ y } x = 0 \text{ (no vale).}$$

Resolver las ecuaciones:

$$1. \log(x - 1) + \log(x + 1) = 2\log x - 1$$

$$2. \log x^2 + 3\log x = 2$$

Solución:

$$1. \log(x - 1) + \log(x + 1) = 2\log x - 1 \implies \log(x^2 - 1) = \log(x - 1)^2$$

$$\implies 9x^2 = 10 \implies x = \frac{\sqrt{10}}{3}, \quad x = -\frac{\sqrt{10}}{3} \text{ (no vale)}$$

$$2. \log x^2 + 3\log x = 2 \implies \log x^5 = \log 100 \implies x = \sqrt[5]{100} = 2,51188$$

Resolver la siguiente ecuación:

$$\log(2 + x) - \log x = 1 + \log(1 - x)$$

Solución:

$$\log(2 + x) - \log x = 1 + \log(1 - x) \implies \log \frac{2 + x}{x} = \log 10 + \log(1 - x)$$

$$\log \frac{2 + x}{x} = \log(10(1 - x)) \implies 10x^2 - 9x + 2 = 0 \implies x = \frac{1}{2}, \quad x = \frac{2}{5}$$

Resolver

$$1. 5\log 2x = 20$$

$$\text{Sol: } x = 5000$$

$$2. 3\log 5x = -9$$

$$\text{Sol: } x = 0,0002$$

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

$$\text{Sol: } x = 252$$

$$4. \log(x + 1)^2 = 2$$

$$\text{Sol: } x = 9; \quad x = -11$$

$$5. \log(7x + 15) - \log 5 = 1$$

$$\text{Sol: } x = 5$$

$$6. \log \frac{x}{2} = 1 + \log(21 - x)$$

$$\text{Sol: } x = 20$$

$$7. \log \frac{10}{x} = 2 - 2\log x$$

$$\text{Sol: } x = 10; \quad x = 0$$

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| 8. $2 \log x - \log(x^2 - 2x + 6) = 0$ | Sol: $x = 3$ |
| 9. $\log(2x - 3) + \log(3x - 2) = 2 - \log 25$ | Sol: $x = 2; x = \frac{1}{6}$ |
| 10. $\log(3x^2 - 2) = 1 + \log(x - 1)$ | Sol: $x = 2; {}_3x = \frac{4}{3}$ |
| 11. $\log x^2 + 3 \log x = 2$ | Sol: $x = 10^{\frac{2}{5}}$ |
| 12. $2 \log x^2 - 2 \log x = 2$ | Sol: $x = 10$ |
| 13. $\log x^2 + 1 = \log x^3$ | Sol: $x = 10$ |
| 14. $\log(1 - x) + \log x = 1$ | Sol: No tiene solución real. |
| 15. $\log x - \log(1 - x) = 1$ | Sol: $x = \frac{10}{11}$ |
| 16. $\log x + 2 = \log x^3$ | Sol: $x = 10$ |
| 17. $\log(1 + x) + \log(1 - x) = 2$ | Sol: No tiene solución real. |
| 18. $\log(2x + 7) - \log(x - 1) = \log 5$ | Sol: $x = 4$ |
| 19. $\frac{\log(35-x^2)}{\log(5-x)} = 3$ | Sol: $x = 3 : x = 2$ |
| 20. $\log x^2 - \log \frac{10x+11}{10} = 1$ | Sol: $x = 11; x = -1$ |
| 21. $\log(2x + 2) + \log(x + 3) = \log 6$ | Sol: $x = 0, x = -4$ |
| 22. $\frac{\log 2 + \log(x^2 - 2)}{\log(2x - 2)} = 2$ | Sol: $x = 2$ |
| 23. $\log(x + 6) - \frac{1}{2} \log(2x - 3) = 2 - \log 25$ | Sol: $x = 6; x = 14$ |
| 24. $\log x = \log 2 + 2 \log(x - 3)$ | Sol: $x = \frac{9}{2}; x = 2$ |
| 25. $2 \log x = 2 + \log x$ | Sol: $x = 0; x = 2$ |
| 26. $\log 8 + (x^2 - 5x + 7) \log 3 = \log 24$ | Sol: $x = 3; x = 2$ |
| 27. $2 \log x - \log 16 = \log \frac{x}{2}$ | Sol: $x = 0; x = 8$ |
| 28. $\log(2x+4) + \log(3x+1) - \log 4 = 2 \log(8-x)$ | Sol: $x = -42 \quad x = 3$ |
| 29. $\frac{\log(35-x^3)}{\log(5-x)} = 3$ | Sol: $x = 3 \quad x = 2$ |
| 30. $\frac{\log 2 + \log(11-x^2)}{\log(5-x)} = 2$ | Sol: $x = \frac{1}{3} \quad x = 3$ |
| 31. $\log(5x + 4) - \log 2 = \frac{1}{2} \log(x + 4)$ | Sol: $x = 0$ |
| 32. $(x^2 - x + 3) \log 4 = 3 \log \frac{1}{4}$ | Sol: No tiene solución. |