# UNIDAD 2: ECUACIONES Y SISTEMAS

## ECUACIONES

**1.** $\frac{x+4}{3}-\frac{7-x}{x-3}=\frac{4x+7}{9}-1$ *$x_1=21$, $x_2=5$*

**2.** $2x^4-3x^2-20=0$ *$x_1=-2$ , $x_2=2$*

**3.** $x^6-19x^3=216$ *$x_1=3$, $x_2=-2$*

**4.** $\left(x+1+\frac{6}{x}\right)\cdot\left(x-1+\frac{6}{x}\right)=24$ *$x_1=3$, $x_2=-3$, $x_3=2$, $x_4=-2$*

**5.** $2x^3-\sqrt{x^3}=120$ *$x_1=4$*

**6.** $x^8-x^4-240=0$ *$x_1=-2$, $x_2=2$*

**7.** $\sqrt{x^2+x+4}=2+\sqrt{x^2-2x+1}$ *$x_1=3$, $x_2=5/7$*

**8.** $\frac{x^2-32}{4}+\frac{28}{x^2-9}=0$ *$x_1=5$, $x_2=-5$, $x_3=4$, $x_4=-4$*

**9.** $\sqrt{3x+1}-\sqrt{2x-1}=1$ *$x_1=1$, $x_2=5$*

**10.** $\sqrt{9+x}-5=\frac{2x+1}{3}$ *$x=-5$*

**11.** $4^{x+1}+2^{x+3}-320=0$ *$x=3$*

**12.** $3^{2(x+1)}-28\cdot3^x+3=0$ *$x_1=1$, $x_2=-2$*

**13.** $2^{2x}+2^{2x-1}+2^{2(x-1)}+2^{2x-3}+2^{2(x-2)}=1984$ *$x=5$*

**14.** $2^{x-1}+2^{x-2}+2^{x-3}+2^{x-4}=960$ *$x=10$*

**15.** $3^x+3^{1-x}=4$ *$x_1=0$ , $x_2=1$*

**16.** $2^{1-x^2}=\frac{1}{8}$ *$x_1=2$, $x_2=-2$*

**17.** $(x^2-5x+9)\lg2+\lg125=3$ *$x_1=2$ y $x_2=3$*

**18.** $\lg(2^{2-x})^{2+x}+\lg1250=4$ *$x_1=-1$ y $x_2=1$*

**19.** $\dfrac{\lg 2 + \lg(11 - x^2)}{\lg(5 - x)} = 2$ — *$x_1=3$, $x_2=1/3$*

**20.** $(x^2\text{-}4x+7)\lg 5 + \lg 16 = 4$ — *$x_1=1$, $x_2=3$*

**21.** $3\lg x - \lg 32 = \lg(x/2)$ — *$x = 4$*

**22.** $5\,lg\,\dfrac{x}{2} + 2\,lg\,\dfrac{x}{3} = 3\,lg\,x - lg\,\dfrac{32}{9}$ — *$x = 3$*

**23.** $2\lg x = 3 + \lg(x/10)$ — *$x = 10$*

## SISTEMAS

**24.** $\begin{cases} x \cdot y = 15 \\ \dfrac{x}{y} = \dfrac{5}{3} \end{cases}$ — (5, 3), (- 5, - 3)

**25.** $\begin{cases} x^2 + y^2 - 5x - 5y = -10 \\ x^2 - y^2 - 5x + 5y = -2 \end{cases}$ — (2, 1), (2, 4), (3, 1), (3, 4)

**26.** $\begin{cases} (x - y)(x + y) = 7 \\ 3x - 4y = 0 \end{cases}$ — (4, 3), (- 4, - 3)

**27.** $\begin{cases} x + y + z = 2 \\ 2x + 3y + 5z = 11 \\ x - 5y + 6z = 29 \end{cases}$ — (1, -2, 3)

**28.** $\begin{cases} 3x - y + z = 1 \\ x + 2y - 2z = -1 \\ 2x - 3y + z = -1 \end{cases}$ — (1/7, 13/14, 3/2)

**29.** $\begin{cases} x - y = 1 \\ 2x + 6y - 5z = -4 \\ x + y - z = 0 \end{cases}$ — (3/2, 1/2, 2)

**30.** $\begin{cases} x + y + z = 2 \\ -2x + y + 2z = 2 \\ 3x - 2y - z = 4 \end{cases}$ — (1, -2, 3)