

# COMPITO ESTIVO – CLASSE 4ªA

1. Risolvi le seguenti disequazioni di 2° grado complete e non

$$4x + 21 - x^2 > 0 \quad x^2 - \frac{3}{5}x + \frac{1}{3} > 0 \quad 4x^2 - 4x\sqrt{3} + 3 \leq 0$$

$$-7x^2 + x - 2 < 0 \quad x^2 + x\sqrt{2} < 0 \quad 4x^2 - 4x + 1 < 0$$

$$5 - x^2 \leq 0 \quad 5x^2 + 3 > 0 \quad \frac{x+1}{2} - x^2 > \frac{x^2+6}{9} - \frac{2x+1}{6}$$

$$\frac{(2+x)(x-1)}{4} - \frac{x(x+3)}{2} > -x$$

$$[x - 4(1-x) + 2](1-x) < x - 2(1-2x)$$

$$2x\left(x - \frac{1}{4}\right) - x\left(x + \frac{1}{4}\right) \leq 1 - \left(x - \frac{1}{2}\right)\left(x + \frac{1}{2}\right)$$

2. Disequazioni fratte

$$\frac{7x-4}{x^2-4} + \frac{2x}{2-x} > \frac{7}{x+2} \quad \frac{x^2+2x-5}{x^2-6x+8} < 0 \quad \frac{3}{x-2} > \frac{2x}{3+x}$$

$$\frac{x^2-3x}{x-2} - \frac{4x-6}{2-x} - x < 5 \quad \frac{x+2}{x-2} - \frac{2-x}{x+3} > \frac{10}{x(x+1)-6}$$

$$x - 2\sqrt{3} \leq \frac{1-4\sqrt{3}}{x+2\sqrt{3}} \quad \frac{x^2-3}{x^2+3} - \frac{x^2+3}{x^2-3}$$

3. disequazioni di grado superiore al secondo

$$x^3 - x^2 - 9x + 9 > 0 \quad 2x^3 - 5x^2 - 3x < 0 \quad 2x^3 - 3x^2 > 0$$

#### 4. sistemi di disequazioni

$$\begin{cases} x^2 - 4x + 3 \leq 0 \\ x^2 - 4 > 0 \end{cases} \quad \begin{cases} x^2 - 5x + 1 \leq 0 \\ x + \frac{3}{2} > \frac{x}{2} + 1 \end{cases} \quad \begin{cases} x + 1 > x + 3 \\ x^2 - 3x > 4 \end{cases}$$

#### 5. Equazioni irrazionali e in valore assoluto

$$|x^2 - 3x + 1| + 5 = 4x^2 \quad 3 - 2x - \sqrt{x^2 - 1} = 4 - x$$

$$2x - 3 - \sqrt{x^2 + 3x - 4} = 1 - x \quad |2x - x^2| = 3x^2 - x - 1$$

#### 5. Equazioni e disequazioni esponenziali

$$2^{x^2-3} = 64 \quad 4^{\frac{3+x}{x-1}} = 2^{5x} \quad 2^{x+1} - 2^x + 2^{x-2} = 5$$

$$e^{\frac{x^2-x}{x+1}} \leq 1 \quad 2^x - 1 > \sqrt{3} \cdot 2^x - 3 \quad 2^x < \frac{7^{x+1}}{2} \quad 2^x + 2^{x+1} + 2^{x+2} > 14$$

#### 6. Equazioni e disequazioni logaritmiche

$$\log_9(5-x) + \log_9(5+x) = 1 + \log_9 2$$

$$\log_7(6-x) + \log_7(6+x) = 1 + \log_7 3$$

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

$$\log 2 + \log(x^2 - 4x + 2) = 2\log(x-2)$$

$$\ln(x+5) + \ln(x-5) = 2\ln 5$$

$$\log_9(1-x) + \log_9(1+x) < 1$$

$$\log_{\frac{9}{4}}(2-x) + \log_{\frac{9}{4}}(2+x) < 0$$

$$\log_3\left(\frac{x+4}{x-2}\right) > 1$$

$$\log_2\left(\frac{x+3}{x-4}\right) > 1$$

$$\log_2(3-x) + \log_2(x+1) > 1$$

$$\log_{\frac{1}{2}}\left(\frac{x-1}{x+1}\right) < \log_{\frac{1}{2}} x$$

$$\log_{0,5}\left(\frac{3}{3x-5}\right) < -\log_{0,5} x$$

$$\ln(\log_2(\frac{2x-1}{3x+1})) > 0$$