

## Esercitazione sulle disequazioni di secondo grado e sulle disequazioni di grado superiore o fratte

- |   |  |
|---|--|
| 1) $3x^2 - x - 4 < 0$   | $S: -1 < x < \frac{4}{3}$  |
| 2) $2x^2 + 5x - 7 > 0$  | $S: \left(x < -\frac{7}{2}\right) \vee (x > 1)$  |
| 3) $2x^2 + 5x - 7 \leq 0$   | $S: \left(-\frac{7}{2} \leq x < 1\right)$  |
| 4) $3x^2 + x + 1 < 0$   | $S = \emptyset$  |
| 5) $4x^2 + 1 > 4x$  | $S = \mathbb{R} - \left\{\frac{1}{2}\right\}$  |
| 6) $2x^2 - x \geq 0$  | $S: (x \leq 0) \vee \left(x \geq \frac{1}{2}\right)$   |
| 7) $x^2 - 6x \leq -9$   | $S = \{3\}$  |
| 8) $5x^2 + x > 4x^2 + 7$  | $S: \left(x < -\frac{1 + \sqrt{29}}{2}\right) \vee \left(x > \frac{\sqrt{29} - 1}{2}\right)$ |
| 9) $x^2 - 5x \geq 2x^2 - 1$   | $S: \left(-\frac{\sqrt{29} + 5}{2} \leq x \leq \frac{\sqrt{29} - 5}{2}\right)$               |
| 10) $(x - 3)^2 + 4(x + 1)^2 > 0$  | $S = \mathbb{R}$   |
| 11) $4x^2 - 9(2x - 3)^2 < 0$  | $S: \left(x < \frac{9}{8}\right) \vee \left(x > \frac{9}{4}\right)$                          |
| 12) $x^2 + 7(2x^2 + x + 1) \leq 0$  | $S = \emptyset$  |
| 13) $\frac{x^2 - 1}{4} - x + 1 \geq 0$                                      | $S: (x \leq 1) \vee (x \geq 3)$  |
| 14) $(3x - 2)(x + 3)(2x - 1) > 0$   | $S: \left(-3 < x < \frac{1}{2}\right) \vee \left(x > \frac{2}{3}\right)$                     |
| 15) $(5x - 10)(2x + 7) \leq 0$  | $S: \left(-\frac{7}{2} \leq x < 2\right)$  |
| 16) $\frac{(x - 3)(2x + 1)}{x(x - 5)} \leq 0$                               | $S: \left(-\frac{1}{2} \leq x < 0\right) \vee (3 \leq x < 5)$                                |
| 17) $\left(x - \frac{3}{2}\right)(2x + 7)\left(-x + \frac{1}{4}\right) < 0$ | $S: \left(-\frac{7}{2} < x < \frac{1}{4}\right) \vee \left(x > \frac{3}{2}\right)$           |
| 18) $\frac{(x + 1)(2 - x)(x + 3)}{(x + 2)} \leq 0$                          | $S: (x \leq -3) \vee (-2 < x \leq -1) \vee (3 \geq 2)$                                       |
| 19) $\frac{(2x - 5)(x + 2)(1 - x)}{(x - 1)(x - 2)} > 0$                     | $S: (x < -2) \vee \left(-2 < x < \frac{5}{2}\right)$   |
| 20) $\frac{(5x - 7)(2 - x)}{x + 2} \leq 0$                                  |  |

$$21) \frac{(x^2 - 4)(x + 3)}{3 - x} \geq 0$$

$$22) \frac{(x^2 - 1)(x - 1)}{(2 + x)(1 + x)} < 0$$

$$23) \frac{x^2 + x + 1}{(2 + x^2)(1 - x)} > 0 \quad S: (x < 1)$$

$$24) \left(x^2 + \frac{1}{x^2}\right) \left(x^2 - \frac{1}{x^2}\right) < 0 \quad S: (-1 < x < 1) \wedge (x \neq 0)$$

$$25) \frac{x^3 + 4x}{x^2 - 4} \geq 0 \quad S: (-2 < x \leq 0) \vee (x > 2)$$

$$26) \frac{1}{x^2 + 2} - \frac{1}{x^2 - 4} \geq 0 \quad S: (-2 < x < 2)$$

$$27) \frac{1}{x} + \frac{1}{x^2} + \frac{1}{x^3} < 0 \quad S: (x < 0)$$

$$28) \frac{1}{x^2} + \frac{1}{x^3} > 0$$

$$29) x^4(-2x^2 + 4) > 0$$

$$30) \frac{1}{x^2 + 1} - \frac{2}{x^2 - 1} > 0$$