

## INEQUALITIES

1. Find the values of  $k$  for which the inequality

$$\frac{x^2 + 2x + 2k}{x^2 + x + 2 - k^2} > 0 \quad \text{Answer: } \frac{1}{2} < k < \frac{1}{2}\sqrt{7}$$

is true for every  $x$ ?

2. Solve the inequalities:

$$\sqrt{1 + x^2} \geq x + 1 \quad \text{Answer: } x \leq 0$$

$$\sqrt{(x + 4)(x - 3)1 + x^2} < 6 - x \quad \text{Answer: } x \leq -4 \text{ or } 3 \leq x < \frac{48}{13}$$

$$\sqrt{2 + x - x^2} > x - 4 \quad \text{Answer: } -1 \leq x \leq 2$$

$$(x - 1)\sqrt{x + 4} < 2 - 4x \quad \text{Answer: } -4 \leq x < 7 - 2\sqrt{10}$$