

## FP2 Inequalities Reintroduction

Solve the following inequalities:

1.  $\frac{x-1}{2} - \frac{2x-1}{3} \leq x - \frac{3-x}{2}$ .

$$x \geq \frac{4}{5}$$

2.  $2x^2 + 3x \geq 14$ .

$$x \leq -\frac{7}{2} \text{ or } x \geq 2$$

3.  $|x| < |x-2|$ .

$$x < 1$$

4.  $|2x-3| > x$ .

$$x < 1 \text{ or } x > 3$$

5.  $\sin x > \frac{1}{2}$ . (degrees)

$$30 + 360n < x < 150 + 360n, n \in \mathbb{Z}$$

6.  $\cos 2x \leq \frac{1}{\sqrt{2}}$ . (radians)

$$-\frac{\pi}{8} + n\pi \leq x \leq \frac{\pi}{8} + n\pi, n \in \mathbb{Z}$$

7.  $\tan x \geq 1$ . (degrees)

$$45 + 180n \leq x < 90 + 180n, n \in \mathbb{Z}$$

8.  $x(x-1)(x+3) < 0$ .

$$x < -3 \text{ or } 0 < x < 1$$

9.  $x^3 + 4x^2 - x - 4 > 0$ .

$$-4 < x < -1 \text{ or } x > 1$$

10.  $\frac{1}{x} \leq 1$ .

$$x < 0 \text{ or } x \geq 1$$

11.  $\frac{x+1}{x-2} > 0$ .

$$x < -1 \text{ or } x > 2$$

12.  $\frac{3x+1}{x-2} \leq 0$ .

$$-\frac{1}{3} \leq x < 2$$

13.  $\frac{3x}{x+1} \leq 5$ .

$$x \leq -\frac{5}{2} \text{ or } x > -1$$

14.  $\frac{2x-1}{3x+1} > 2$ .

$$-\frac{3}{4} < x < -\frac{1}{3}$$

15.  $\frac{4x+1}{x-4} \leq 5$ .

$$x < 4 \text{ or } x \geq 21$$

16.  $1 \leq \frac{3-x}{2x+1}$ .

$$-\frac{1}{2} < x \leq \frac{2}{3}$$

17.  $\frac{1}{x} < \frac{1}{x-2}$ .

$$x < 0 \text{ or } x > 2$$

18.  $\frac{1}{x} \geq 2x+1$

$$x < -1 \text{ or } 0 < x < \frac{1}{2}$$