$$ax^2 + bx + c = 0$$

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Discriminant

$$1x^2 + 5x + 6 = 0$$

$a \quad b \quad c$

$$x_{1,2} = \frac{-5 \pm \sqrt{25 - 4 \cdot 1 \cdot 6}}{2 \cdot 1}$$

$$x_{1,2} = \begin{cases} \frac{-5 + 1}{2} = -2 \\ \frac{-5 - 1}{2} = -3 \end{cases}$$

$$\underset{a}{1}(x - (-2))(x - (-3)) = 0$$

$$(x+2)(x+3) = 0$$

$$x^2 + 5x + 6 \geq 0$$

$$(x+2)(x+3) \geq 0$$

$$x^2 + 5x + 6 = 0$$

$$(x+2)(x+3) = 0$$

	-3		-2	
$x+2$	$-$	$-$		$+$
$x+3$	$-$	$+$		$+$
	$+$	$-$		$+$

$$x \in (-\infty, -3] \cup [-2, \infty)$$

closed $[-3,-1]$ -3 is in :)

open $(-3,-1)$ -3 not in :(

$\to$ $\langle -3,-1 \rangle$ $[-3,-1]$

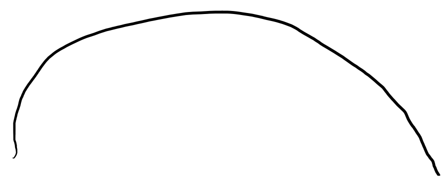
$\to$ $]-3,-1[$

1 root

1 root $(x^2+2x+1)=0$ $(x+1)^2=0$

0 roots $1+x^2=0$ no roots

concave down



(4b) $\frac{2x}{2x^2+5x+2} > \frac{1}{x+1}$

$$\frac{2x}{2x^2+5x+2} - \frac{1}{x+1} > 0$$

$$\frac{2x(x+1) - 1\cdot(2x^2+5x+2)}{(2x^2+5x+2)(x+1)} > 0$$

$$\frac{\cancel{2x^2} + 2x - \cancel{2x^2} - 5x - 2}{(2x^2+5x+2)(x+1)} > 0$$

$$\frac{(-3x-2)}{(2x^2+5x+2)(x+1)} > 0$$

Conditions $x \neq -1$ $x \neq -2$ $x \neq -\frac{1}{2}$

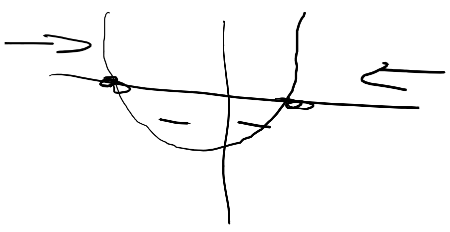
$$2x^2+5x+2 = 0$$

$$x_{1,2} = \frac{-5 \pm \sqrt{\overbrace{25-16}^{3}}}{4}$$

$$x_{1,2} = \begin{cases} -\frac{1}{2} \\ -2 \end{cases}$$

Zero points $-\frac{2}{3}$

		-2		-1		$-\frac{2}{3}$		$-\frac{1}{2}$	
$-3x-2$	$+$		$+$		$+$		$-$		$-$
$x+1$	$-$		$-$		$+$		$+$		$+$
$2x^2+5x+2$	$+$		$-$		$-$		$-$		$+$
	$-$		$+$		$-$		$+$		$-$



$x \in (-2, -1) \cup (-\frac{2}{3}, -\frac{1}{2})$

~~& AND ∧~~