

(1) $|x+2| > |x+1| + x$

	-2		-1	
$x+2$	-	*	+	+
$x+1$	-	-	*	+

(a) $x \in (-\infty, -2)$

$$-x-2 > -x-1+x$$

$$\boxed{-1 > x}$$

$$x \in (-\infty, -2)$$

(b) $x \in (-2, -1)$

$$x+2 > -x-1+x$$

$$\boxed{x > -3}$$

$$x \in (-2, -1)$$

(c) $x \in (-1, \infty)$

$$x+2 > x+1+x$$

$$\boxed{1 > x}$$

$$x \in (-1, 1)$$

(d) hranici body

$$x = -2$$

$$0 > |-2+1| - 2$$

$$0 > -1 \quad \checkmark$$

$$x = -1$$

$$|-1+2| > -1$$

$$1 > -1 \quad \checkmark$$

Závěr:

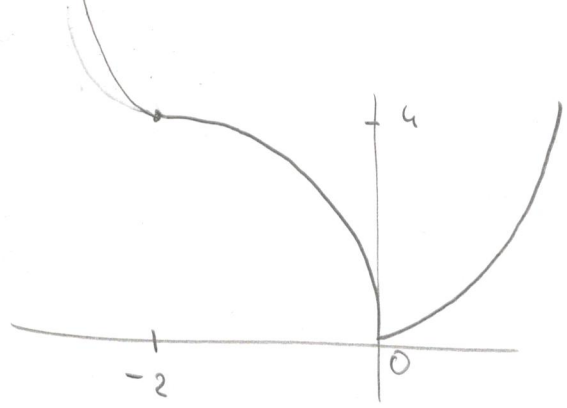
$$\boxed{x \in (-\infty, 1)}$$

$$(2) |x^2 + 2x| < a + 2x$$

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

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

$$|x^2 + 2x| - 2x < a$$



$$(a) \quad x^2 + 2x > 0$$

$$x \in (-\infty, -2) \cup (0, \infty)$$

$$x^2 + 2x < a + 2x$$

$$x^2 < a$$

$$x_1, x_2 = \pm\sqrt{a} \rightarrow a > 0$$

$$(b) \quad x^2 + 2x < 0$$

$$x \in (-2, 0)$$

$$-x^2 - 2x < a + 2x$$

$$0 < x^2 + 4x + a$$

$$x_{1,2} = \frac{-4 \pm \sqrt{16 - 4a}}{2}$$

$$x_{1,2} = -2 \pm \sqrt{4 - a}$$

$a < 4$

$$(1) \quad a \leq 0 \quad \emptyset$$

$$(2) \quad a \in (0, 4)$$

$$x \in [0, \sqrt{a}) \cup (-2 + \sqrt{4 - a}, 0)$$

$$= (-2 + \sqrt{4 - a}, \sqrt{a})$$

$$(3) \quad a \in [4, \infty)$$

$$x \in (-\sqrt{a}, \sqrt{a})$$

$$(3) f(x, y, z) = e^{x+yz} + \frac{1}{1+(x+y)^2}$$

$$\frac{\partial f}{\partial x} = e^{x+yz} + \frac{-1}{(1+(x+y)^2)^2} \cdot 2(x+y)$$

$$\frac{\partial f}{\partial y} = e^{x+yz} \cdot z + \frac{-1}{(1+(x+y)^2)^2} \cdot 2(x+y)$$

$$\frac{\partial f}{\partial z} = e^{x+yz} \cdot y$$