

**R.**

1.

$$ax^2 + 2(a+1)x + 2a = 0. \quad (1)$$

$$a = 0 \quad (1),$$

$$2x = 0 \Leftrightarrow x = 0. \quad a \neq 0. \quad D = 4(-a^2 + 2a + 1)$$

$$: a_1 = 1 - \sqrt{2} \quad a_2 = 1 + \sqrt{2}. \quad D$$

$$- D < 0 \quad \dots \quad a \in (-\infty, 1 - \sqrt{2}) \cup (1 + \sqrt{2}, +\infty), \quad (1)$$

$$- D = 0 \quad \dots \quad a = 1 - \sqrt{2} \quad a = 1 + \sqrt{2}, \quad (1)$$

$$x = -\frac{a+1}{a}. \quad a = 1 - \sqrt{2}, x = \sqrt{2}; \quad a = 1 + \sqrt{2}, x = -\sqrt{2}.$$

$$- D > 0 \quad \dots \quad a \in (1 - \sqrt{2}, 0) \cup (0, 1 + \sqrt{2}), \quad (1)$$

$$: x_1 = \frac{-2(a+1) + \sqrt{D}}{2a}, \quad x_2 = \frac{-2(a+1) - \sqrt{D}}{2a}.$$

$$, \quad ax^2 + 2(a+1)x + 2a = 0 \quad :$$

$$- a \in (-\infty, 1 - \sqrt{2}), \quad ;$$

$$- a = 1 - \sqrt{2}, \quad x = \sqrt{2};$$

$$- a \in (1 - \sqrt{2}, 0), \quad x_1 = \frac{-(a+1) + \sqrt{-a^2 + 2a + 1}}{a}, \quad x_2 = \frac{-(a+1) - \sqrt{-a^2 + 2a + 1}}{a};$$

$$- a = 0, \quad x = 0;$$

$$- a \in (0, 1 + \sqrt{2}), \quad x_1 = \frac{-(a+1) + \sqrt{-a^2 + 2a + 1}}{a}, \quad x_2 = \frac{-(a+1) - \sqrt{-a^2 + 2a + 1}}{a};$$

$$- a = 1 + \sqrt{2}, \quad x = -\sqrt{2};$$

$$- a \in (1 + \sqrt{2}, +\infty), \quad ;$$

2.

$$\sqrt{2x+a} \geq x. \quad (2)$$

$$2x + a \geq 0 \Leftrightarrow x \geq -\frac{a}{2}$$

1)  $x < 0$ . (2)  $(x, a)$

$$\begin{cases} x < 0 \\ x \geq -\frac{a}{2} \end{cases} \quad (3)$$

1)  $a \leq 0$ , (3) ,

1)  $a > 0$ , (3)  $x \in [-\frac{a}{2}, 0)$ .

2)  $x \geq 0$ ,

$$\begin{cases} x \geq -\frac{a}{2} \\ \sqrt{2x+a} \geq x \end{cases} \Leftrightarrow \begin{cases} x \geq -\frac{a}{2} \\ 2x+a \geq x^2 \end{cases} \Leftrightarrow \begin{cases} x \geq -\frac{a}{2} \\ x^2 - 2x - a \leq 0 \end{cases}$$

$$x^2 - 2x - a \leq 0. \quad D$$

$$D = 4(a+1). \quad D$$

2)  $a < -1$ , ;

2)  $a \geq -1$   $x^2 - 2x - a \leq 0$ , ,

$$1 - \sqrt{a+1} \leq x \leq 1 + \sqrt{a+1};$$

( ( ) ),  
(2) :

$$\begin{cases} x \geq -\frac{a}{2} \\ x \geq 0 \\ a \geq -1 \\ 1 - \sqrt{a+1} \leq x \leq 1 + \sqrt{a+1} \end{cases} \quad (4)$$

, ( )  $0, -\frac{a}{2}$

$$1 - \sqrt{a+1}.$$

$$: 0 > 1 - \sqrt{a+1} \Leftrightarrow \sqrt{a+1} > 1 \Leftrightarrow a > 0.$$

$$a > 0 \quad 0 > -\frac{a}{2}. \quad , \quad 2)$$

:

2b')  $a > 0$ , (4)  $x \geq 0$

$$x \leq 1 + \sqrt{a+1}, \quad x \in [0, 1 + \sqrt{a+1}].$$

2b")  $-1 \leq a \leq 0$ .  $: 0 \leq -\frac{a}{2}$   $0 \leq 1 - \sqrt{a+1}$ .

$-\frac{a}{2}$   $1 - \sqrt{a+1}$ :

$-\frac{a}{2} > 1 - \sqrt{a+1} \Leftrightarrow \sqrt{a+1} > 1 + \frac{a}{2} \Leftrightarrow a+1 > 1 + a + \frac{a^2}{4} \Leftrightarrow \frac{a^2}{4} < 0$ ,

$a \cdot 1 - \sqrt{a+1} \geq -\frac{a}{2} \geq 0$

, (4)  $: x \geq 1 - \sqrt{a+1}$   $x \leq 1 + \sqrt{a+1}$ ,

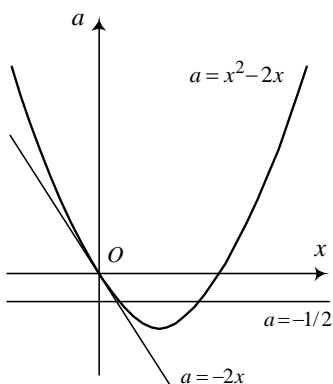
$\dots x \in [1 - \sqrt{a+1}, 1 + \sqrt{a+1}]$ .

)  $a < -1$ ,

)  $-1 \leq a \leq 0$ ,  $X = [1 - \sqrt{a+1}, 1 + \sqrt{a+1}]$ ;

)  $a > 0$ ,  $X = [-\frac{a}{2}, 0) \cup [0, 1 + \sqrt{a+1}] = [-\frac{a}{2}, 1 + \sqrt{a+1}]$ .

$\sqrt{2x+a} \geq x$



$\begin{cases} x < 0 \\ x \geq -\frac{a}{2} \end{cases}$

$\begin{cases} x \geq 0 \\ x \geq -\frac{a}{2} \\ x^2 - 2x - a \leq 0 \end{cases}$

$xOa$

$a = -2x$

$a = x^2 - 2x$ .  $x^2 - 2x = -2x \Leftrightarrow x = 0$ ,

$O(0,0)$ .

$x \geq -\frac{a}{2} \Leftrightarrow x \geq -\frac{a}{2} \Leftrightarrow a \geq -2x$ .

$(x, a)$

$(x < 0)$ , “ ”  $a = -2x$  ( ) .

$(x, a)$

( )  $x = 0$ , “ ”  $a = -2x$

( ) “ ”  $a = x^2 - 2x$  ( ) .

$a \geq x^2 - 2x \Leftrightarrow 1 - \sqrt{a+1} \leq x \leq 1 + \sqrt{a+1}$ ,  $a \geq -1$ .

, :

- 
- $a < -1$ , ,
  - $-1 \leq a \leq 0$ ,  $X = [1 - \sqrt{a+1}, 1 + \sqrt{a+1}]$ ;
  - $a > 0$ ,  $X = [-\frac{a}{2}, 1 + \sqrt{a+1}]$ .

:

1. )  $(a+1)x^2 - (a-1)x - 2a = 0$ , )  $\frac{1}{x-a} + \frac{1}{ax} = 1$ .
2. )  $\sqrt{x - \sqrt{x-a}} = a$ , )  $\sqrt{a - \sqrt{a+x}} = x$ .

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3.  $(a+1)x > 3a - 1$
4.  $\frac{a}{ax-a-1} \leq 2$
5.  $\frac{ax+1}{ax-1} \geq \frac{a+1}{a-1}$
6.  $\sqrt{2ax+1} \geq x-1$
7.  $\sqrt{x+a} \geq x+1$