

观察

~~$$\begin{aligned} &-(x-1) \\ &-(x^2+x+1) \end{aligned}$$~~

改变记号:  $x^2 - ax^2 - 2ax + a^2 - 1 = 0$

$$a^2 - (x^2 + 2x)a + x^3 - 1 = 0$$

$$\underbrace{(x-a-1)}_{=0} \underbrace{(x^2+x+1-a)}_{=0} = 0$$

$x = a+1$

$\Delta < 0 \Rightarrow 0 < \frac{a}{x} < \frac{2}{x}$

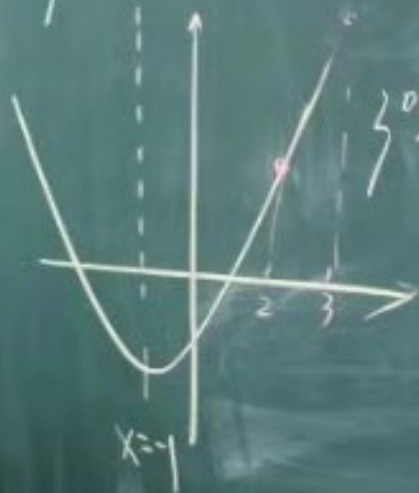
$\frac{a}{x} < \frac{2}{x}$

$\Delta = 0$   
 $a = \frac{2}{x}$

$x = -\frac{1}{2}$

例1. 求最值

例1.  $f(x) = 2x^2 + 4x - 1$   $2 \leq a \leq 2$



$f(x)_{\min} = f(a) = -a^2$   $0 \leq a \leq 0$

$0 \leq a \leq 2$

$f(x)_{\min} = f(2) = 1 - 4a$

$2 \leq a \leq 2$

$f(x)_{\max} = f(-2) = 1 + 4a$

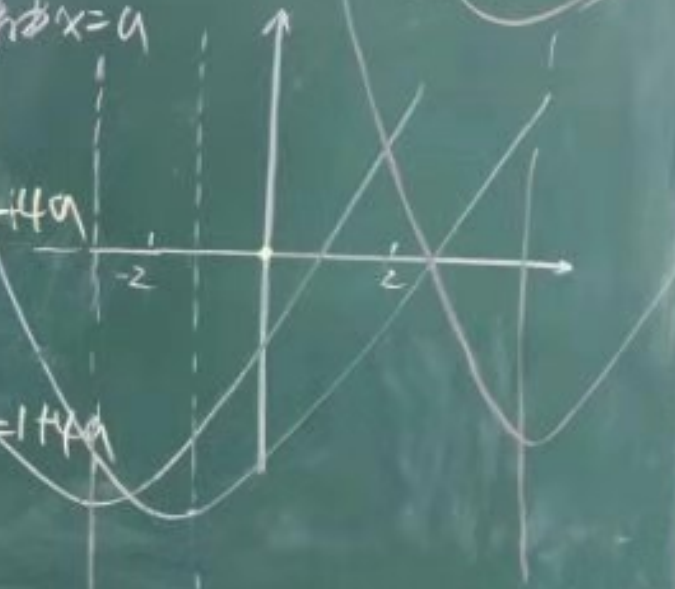
对称轴为  $x = -1$

例2. 求  $f(x) = x^2 - 2ax - 3$  在  $[-2, 2]$  上的最值

首先求最值

$\frac{1}{2}$  最小值

对称轴  $x = a$



观察法

~~$-(x-1)$~~   
 ~~$-(x^2+x+1)$~~

改变记号  $x^3 - ax^2 - 2ax + a^2 - 1 = 0$

$a^2 - (x^2 + 2x)a + x^3 - 1 = 0$

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

$x = a+1$

$\Delta < 0 \rightarrow 0 < \frac{x}{x^2}$

$\Delta = 0$   
 $a = \frac{x}{x^2}$   
 $x = -\frac{1}{2}$