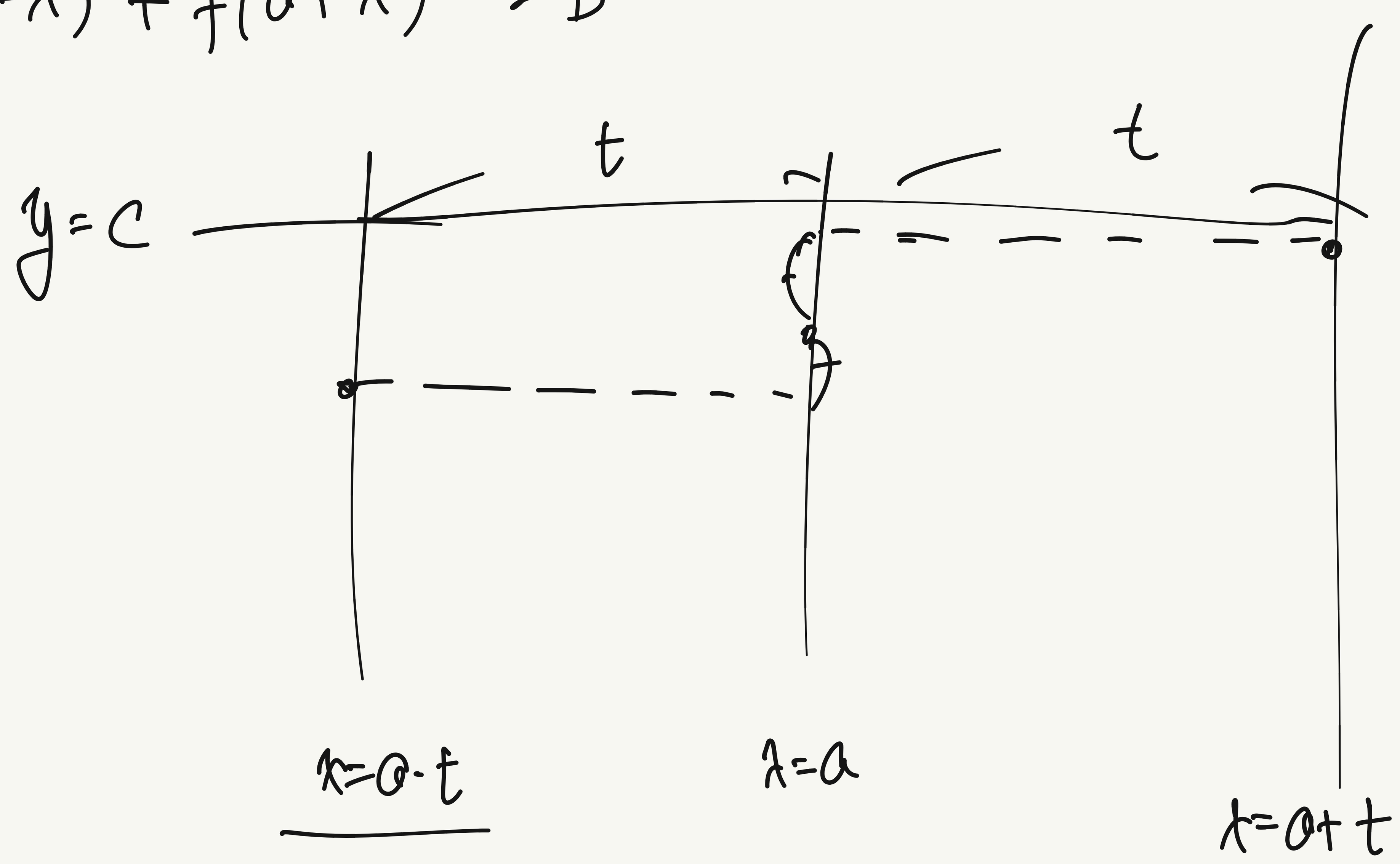
$f(x) \leftrightarrow (a, b)$

① $f(a-x) + f(a+x) = 2b$ (t) (t)



$(a-t,\ f(a-t))$

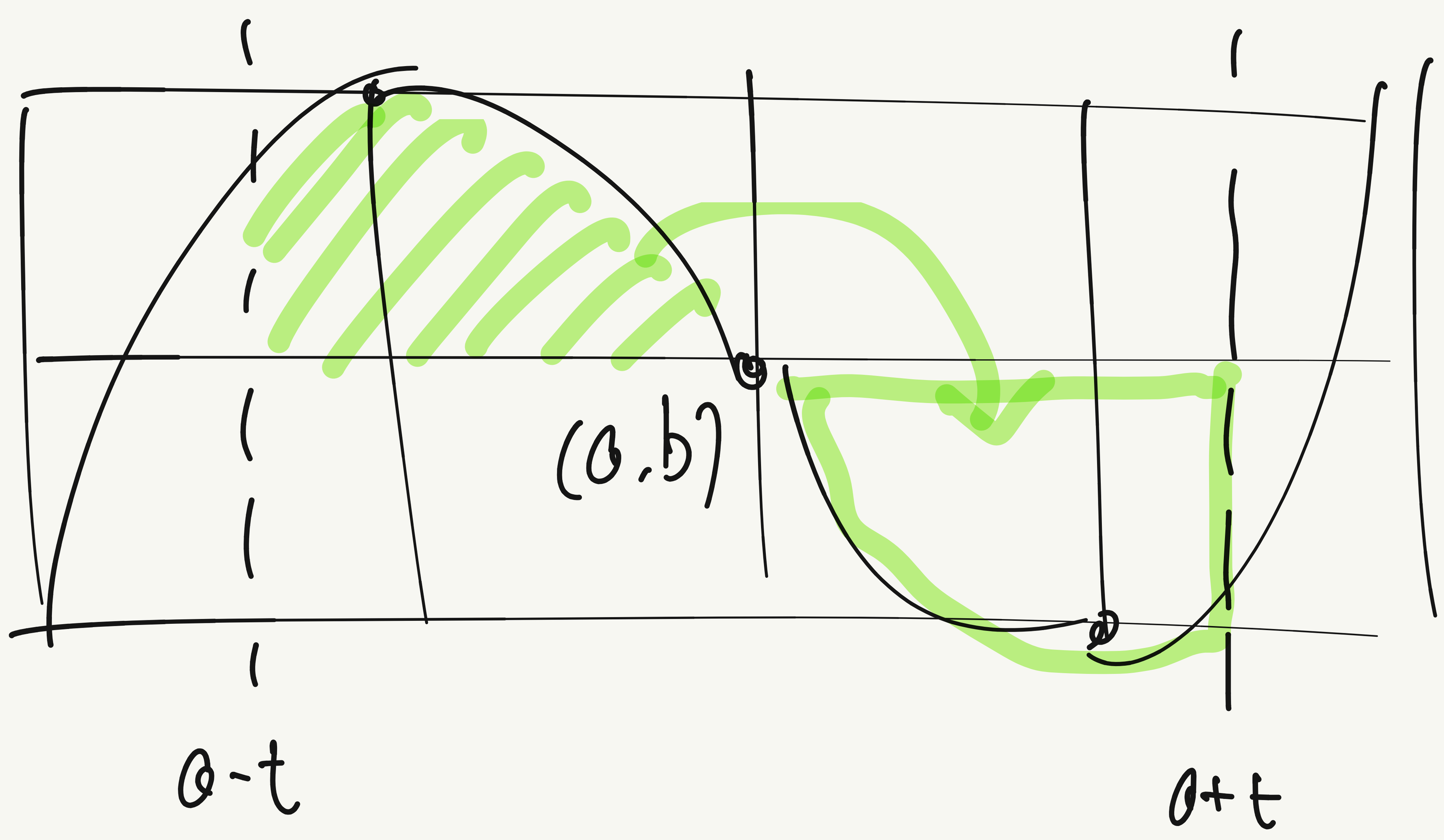
$\rightarrow \{(x, y) \mid y = f(x)\} \cap \{(x, y) \mid x = a-t\} = \{(a-t,\ f(a-t))\}$

② $\int_{a-t}^{a+t} f(x)\,dx = 2bt$

Y: f(x)= 연속함수이다. why? 2번

$Y + b = y$

$y = f(x) \rightarrow Y = f(x) - b$



$y = b \rightarrow Y = 0$

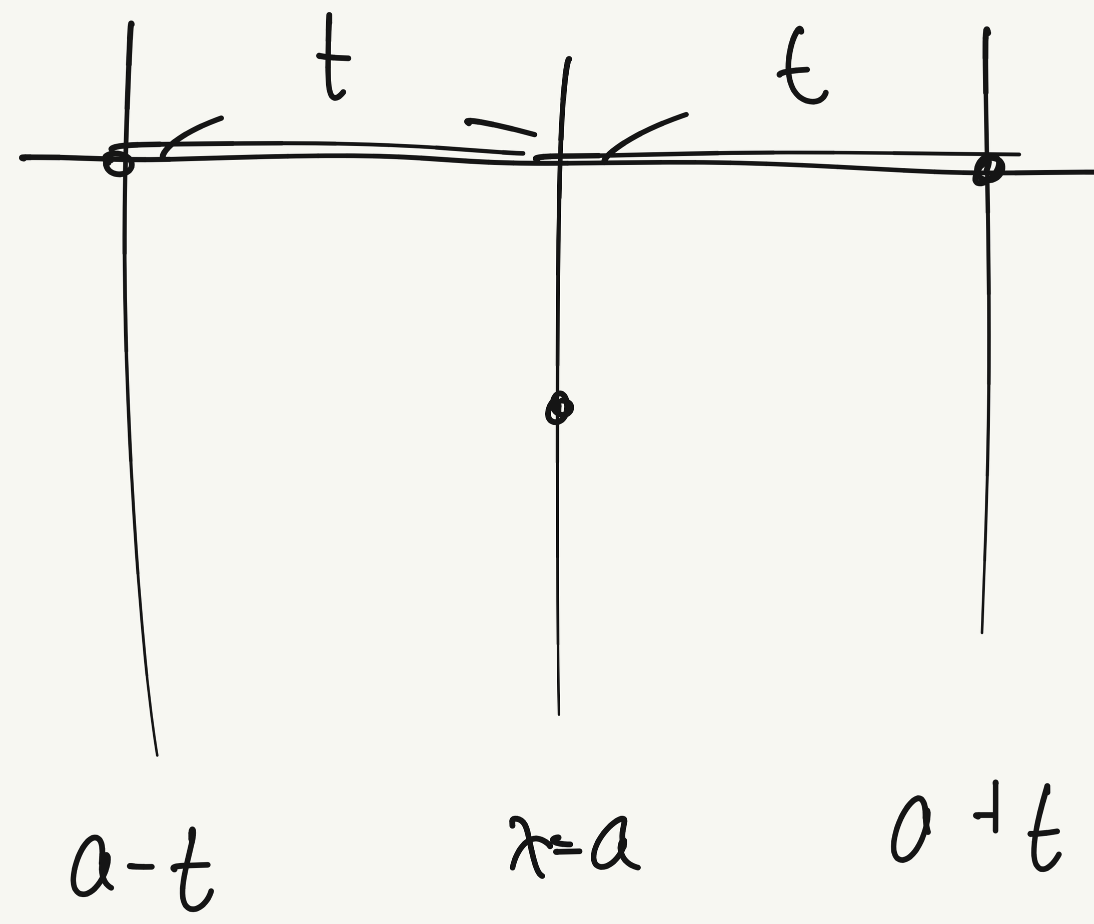
Y를 기준으로 $\int_{a-t}^{a+t} \{f(x) - b\}\,dx = \int_{a-t}^{a+t} 0\,dx = 0$

$= \int_{a-t}^{a+t} f(x)\,dx - \int_{a-t}^{a+t} b\,dx = 0$

$\rightarrow \int_{a-t}^{a+t} f(x)\,dx = \int_{a-t}^{a+t} b\,dx = 2bt$

$f(x) \leftrightarrow (x=a)$

① $f(a-\cancel{x}^{\,t}) = f(a+\cancel{x}^{\,t})$



$y=c \quad \left(c = f(a-t) = f(a+t) \right)$

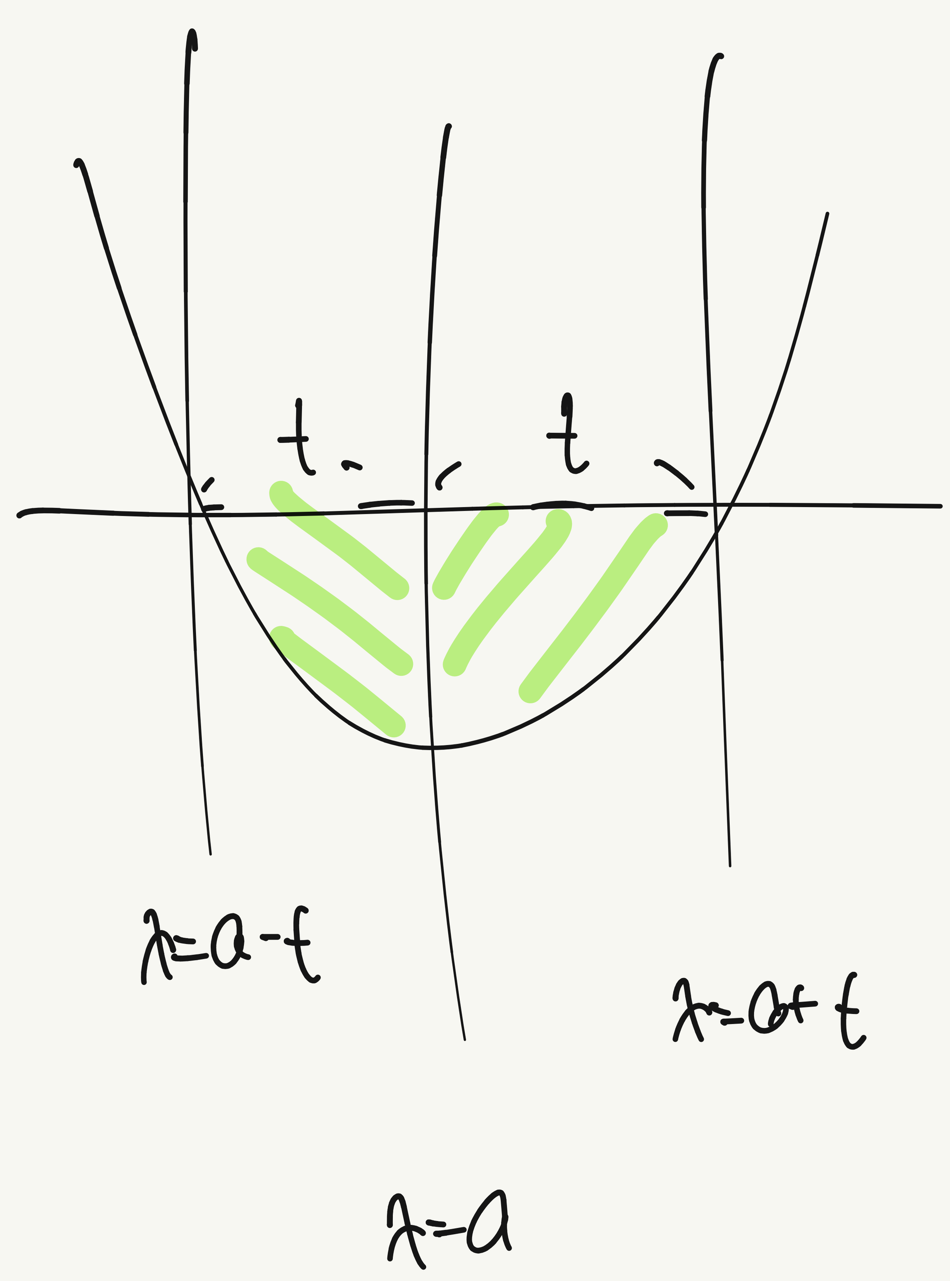
$\{(x,y) \mid x=a-t\} \cap \{(x,y) \mid y=c\} = \{\underset{\sim}{(a-t,c)}\}$

$\{(x,y) \mid x=a+t\} \cap \{(x,y) \mid y=c\} = \{\underset{\sim}{(a+t,c)}\}$

$f(x) =$ 이차함수 (?) → 23번

② $\displaystyle\int_{a-t}^{a} f(x)\,dx = \int_{a}^{a+t} f(x)\,dx,$

$\displaystyle\int_{a-t}^{a+t} f(x)\,dx = 2\int_{a-t}^{a} f(x)\,dx = 2\int_{a}^{a+t} f(x)\,dx$



$y=c=f(a-t)=f(a+t)$

$\displaystyle\int_{a-t}^{a} \{c-f(x)\}\,dx = \int_{a}^{a+t} \{c-f(x)\}\,dx$ — $y=c$ 상수함수

$\displaystyle\int_{a-t}^{a} -f(x)\,dx = \int_{a}^{a+t} -f(x)\,dx$

$\displaystyle\int_{a-t}^{a} f(x)\,dx = \int_{a}^{a+t} f(x)\,dx$

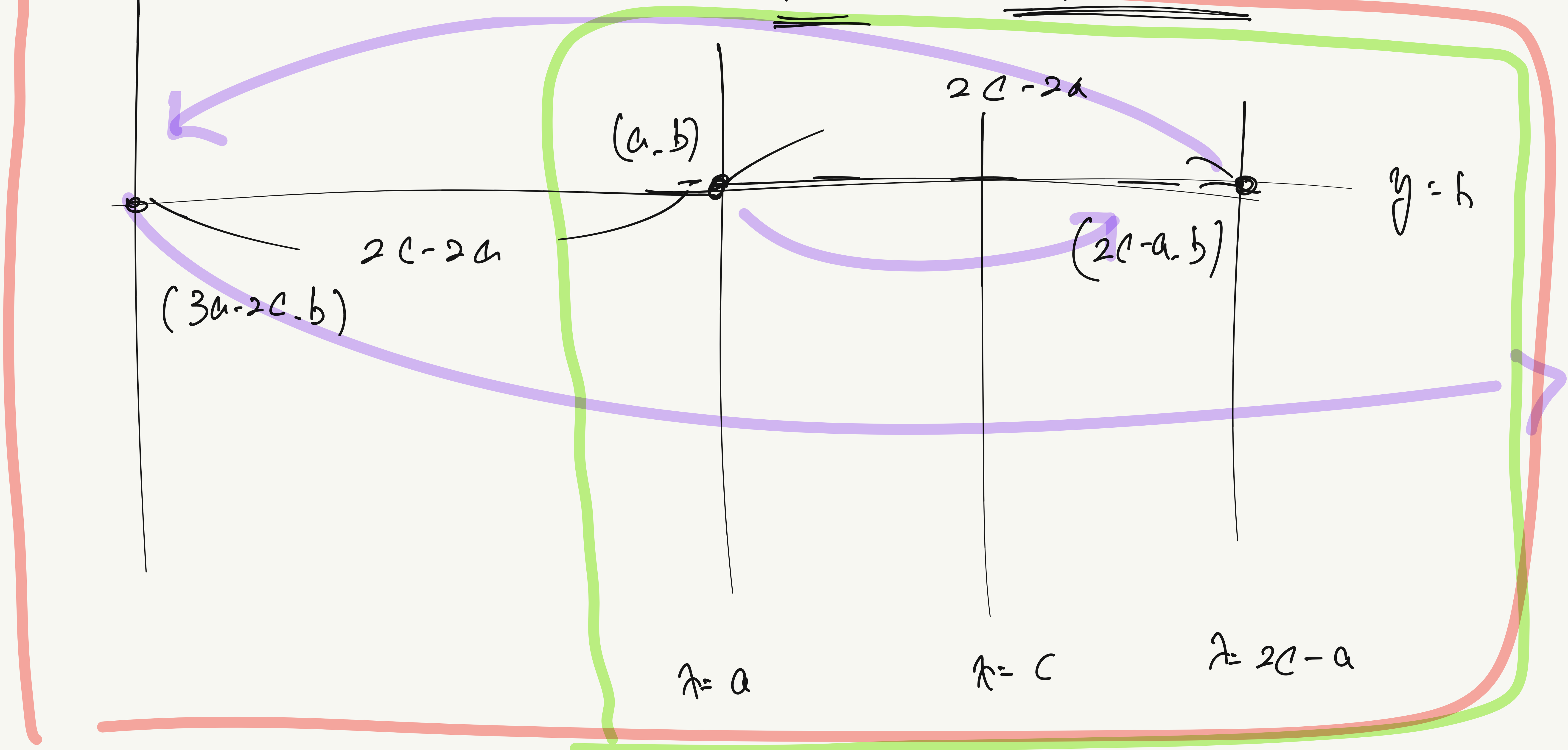
다항함수 $f(x)$가 어떤 점 (a,b)에 대하여 대칭 & 직선 $x=c$에 대칭

② $f(a-x)+f(a+x)=2b$ ① $f(c-x)=f(c+x)$

$x=c-a$

$f(a)=b$

$f(a) = f(2c-a) = b$



$a \to 2c-a \to 3a-2c \to -3a+4c \to 5a-4c \to -5a+6c \cdots$

$\downarrow x=c$ $\quad\downarrow (a,b)$ $\quad\downarrow x=c$ $\quad\downarrow (a,b)$ $\quad\downarrow x=c$

방정식 $f(x)=b$ 의 실근의 개수는 셀수없이 많음.

$\to f(x)=b$

☆ 어떤 점에 대해 대칭 & 어떤 선에 대해 대칭인 다항함수

→ 반드시 선형! (상수함수와 일차함수)