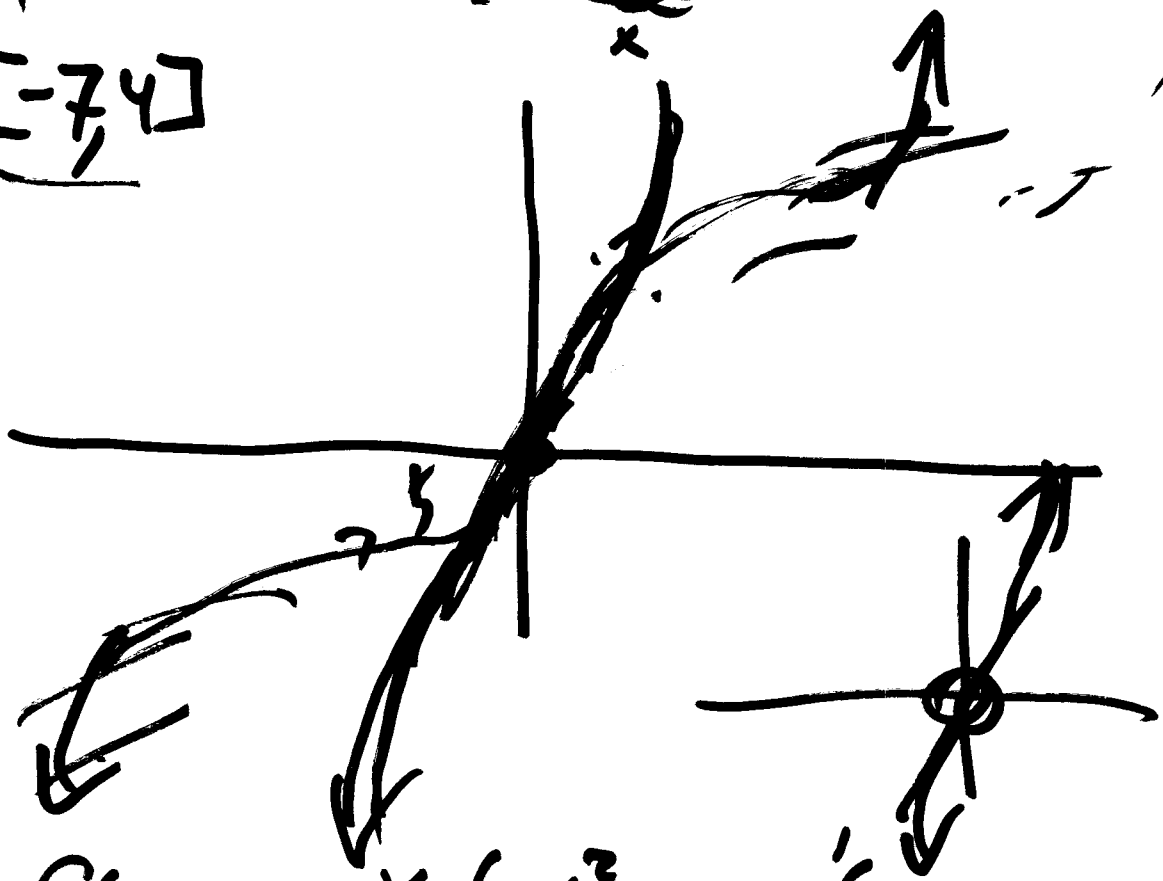
10(30

$f(x) = x\sqrt{x^2+25}$ $\quad \sqrt{x^2(1+5x^{-2})} = |x|\sqrt{1+5x^2}$

$[-7, 4]$



$f(x) = x(x^2+25)^{1/2}$

$f'(x) = 1\cdot(x^2+25)^{\frac{1}{2}} + x\cdot\frac{1}{2}(x^2+25)^{-\frac{1}{2}}\cdot 2x$

$= \sqrt{x^2+25} + \frac{x^2}{\sqrt{x^2+25}}$

$\frac{9}{6} = 0 \Rightarrow 9 = 0$

$= \frac{x^2+25+x^2}{\sqrt{x^2+25}} = \frac{2x^2+25}{\sqrt{x^2+25}}$

$f(0) = 5$

$$f'(x) = \frac{2x^2+25}{(x^2+25)^{1/2}}$$

$$f''(x) = \frac{(x^2+25)^{1/2}\cdot(4x) - (2x^2+25)\frac{1}{2}\frac{2x}{\sqrt{x^2+25}}}{x^2+25}$$

$$= \frac{(x^2+25)(4x) - (2x^2+25)\cdot x}{(x^2+25)^{3/2}} \times \frac{\sqrt{x^2+25}}{\sqrt{x^2+25}}$$

$$\frac{\frac{a}{b}}{c} = \frac{a}{b\cdot c} \qquad \frac{\sqrt{u}+\frac{k}{\sqrt{u}}}{v} = \frac{(u+k)}{v\cdot\sqrt{u}}$$

$$f'(x) = \frac{2x^3+75x}{(x^2+25)^{3/2}} = 0 \quad \text{when } x(2x^2+75)=0$$

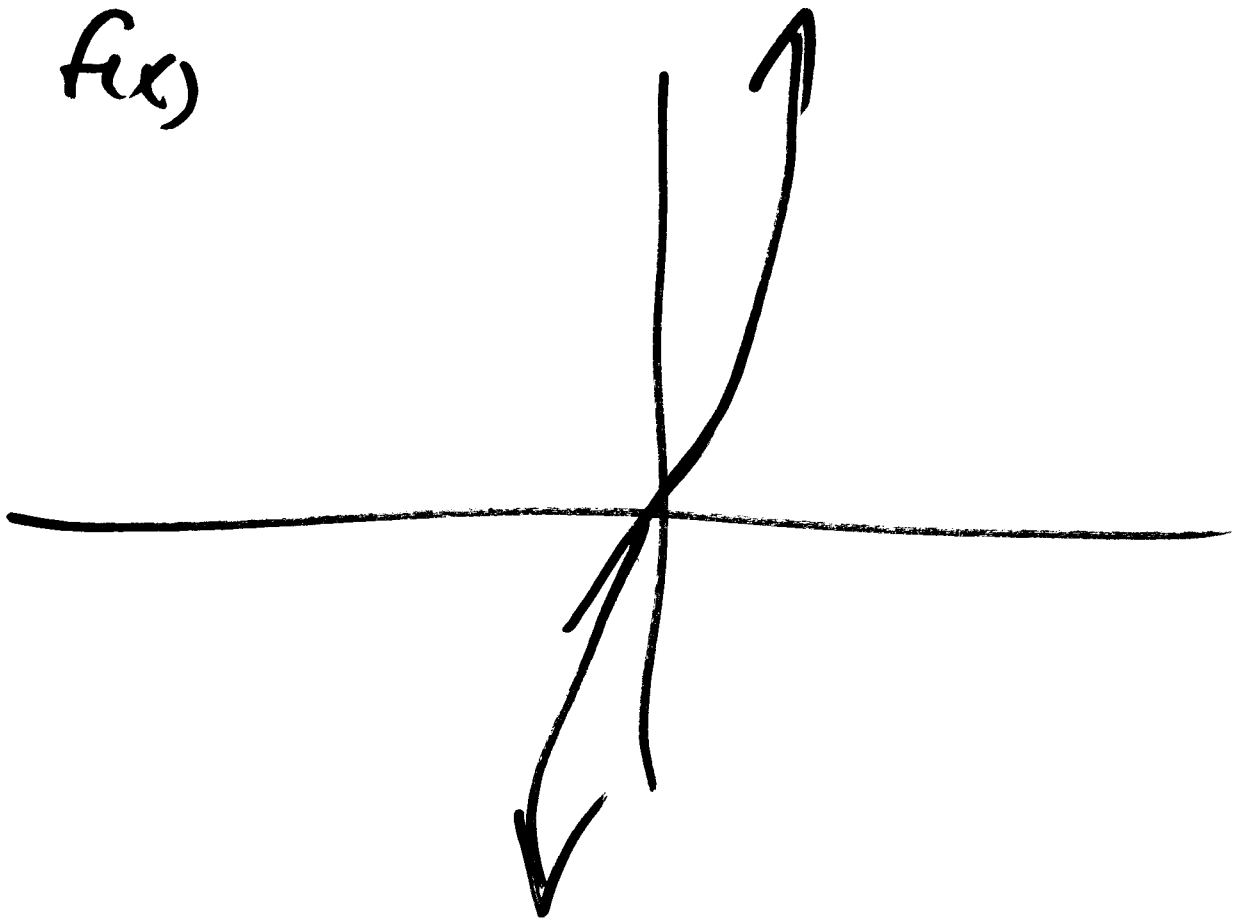
$$x=0$$

$$f''(x) = \frac{x(2x^2+75)}{(2x^2+25)^{3/2}}$$

> 0 if $x > 0$

< 0 if $x < 0$

$= 0$ if $x = 0$



1. $f(x) = \frac{3x+9}{6x+2} = y = \frac{3(x-3)'}{6(x--1/3)'}$

Inverse $\frac{3y+9}{6y+2} = x$

$3y+9 = x(6y+2) = 6xy + 2x$

$3y - 6xy = 2x - 9$

$y(-6x+3) = 2x-9$

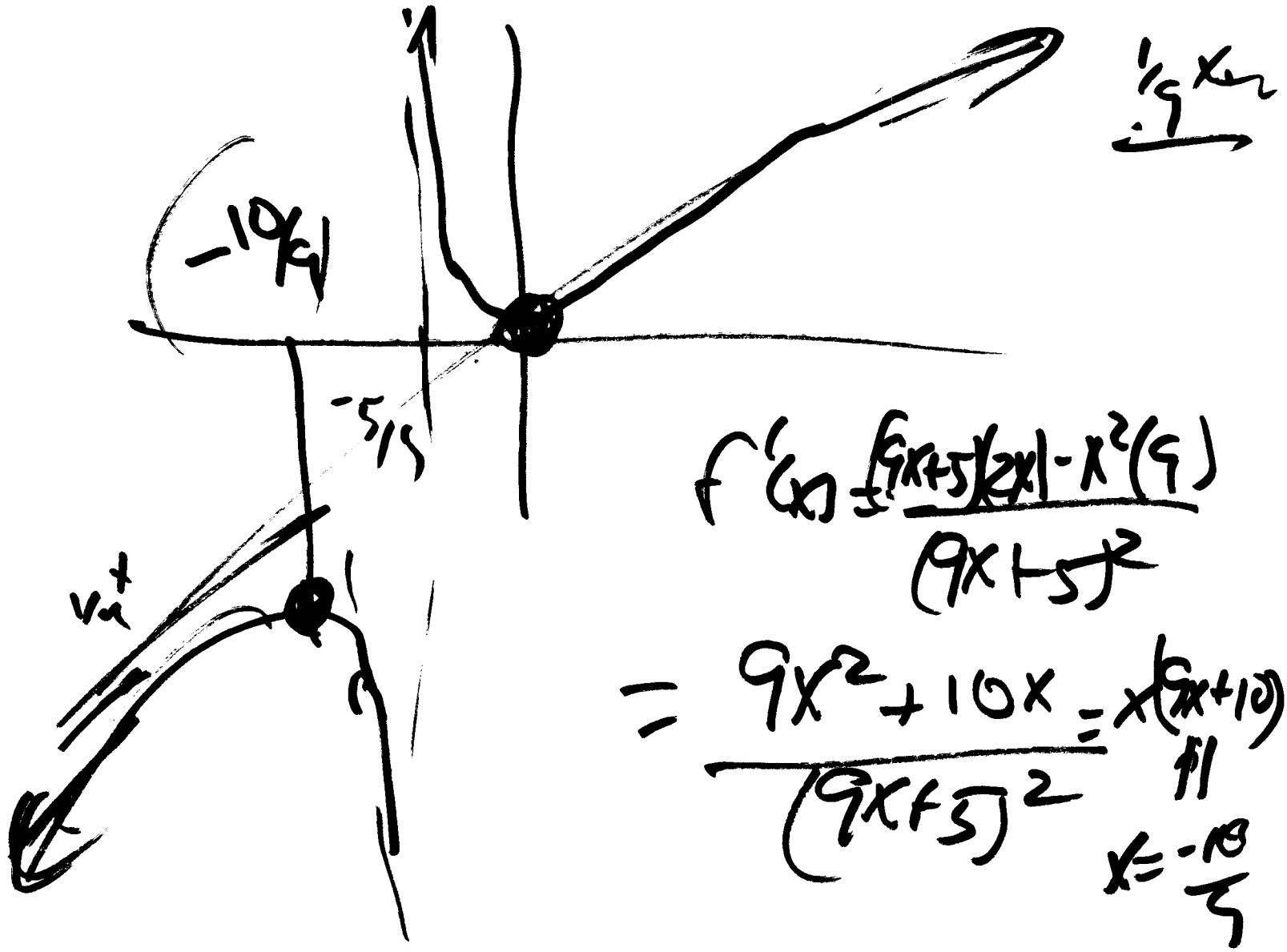
$y = \frac{2x-9}{-6x+3}$

$f'(x) = \frac{(6x+2)(3)-(3x+9)(6)}{(6x+2)^2}$

$(18x+6) - (18x+54)$

$\frac{-48}{(6x+2)^2} = f'(x) < 0 \quad \forall x \neq 0$

$$f(x) = \frac{x^2}{9x+5} = \frac{1(x-0)^2}{9(x-\frac{-5}{9})^1}$$

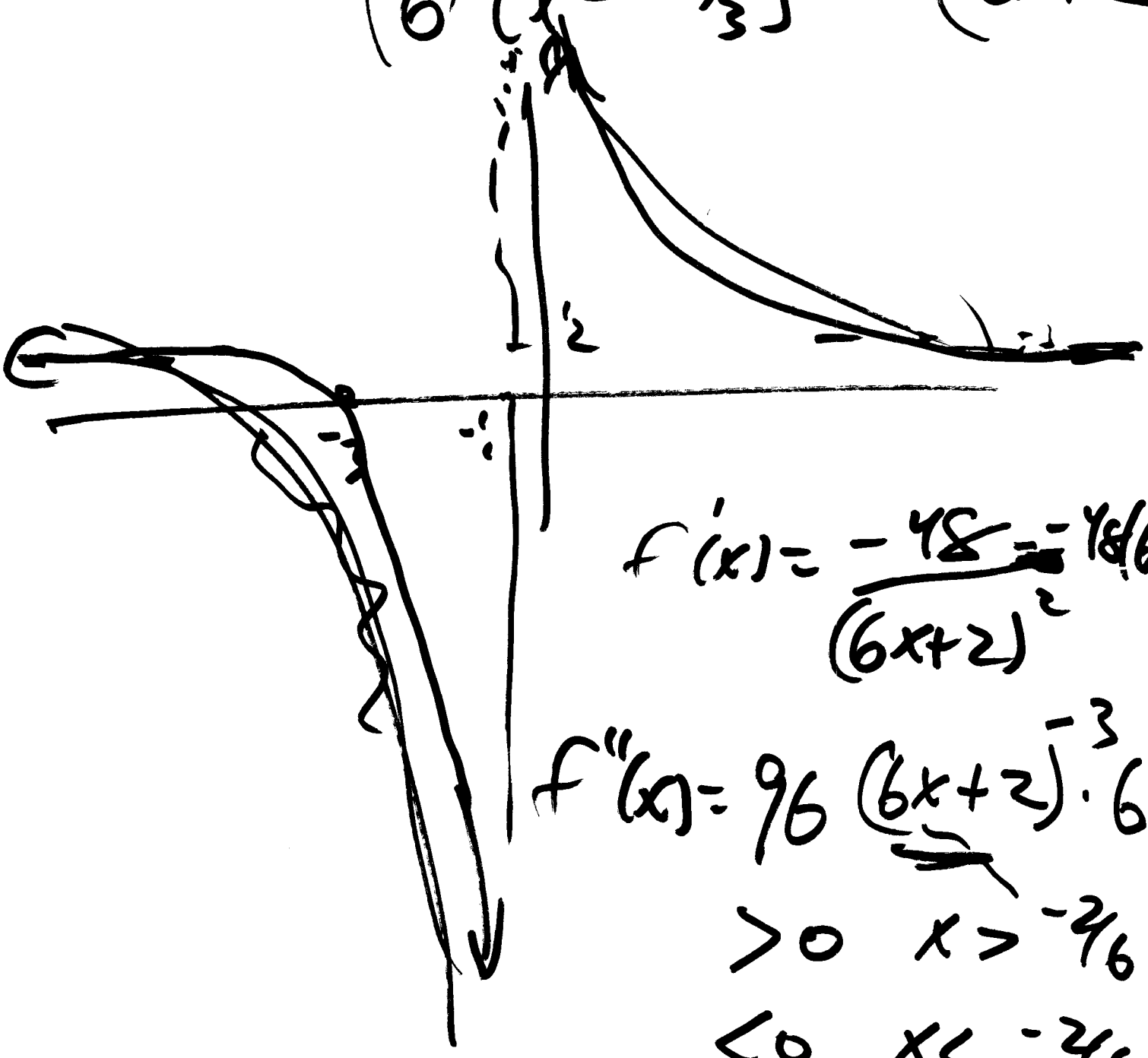


$$f'(x) = \frac{(9x+5)(2x) - x^2(9)}{(9x+5)^2}$$

$$= \frac{9x^2+10x}{(9x+5)^2} = \frac{x(9x+10)}{\text{fl}}$$

$$x = \frac{-10}{9}$$

$$f(x) = \left(\frac{3}{6}\right)\frac{(x-(-3))'}{(x-(-1/3))'} = \left(\frac{3x+9}{6x+2}\right)$$



$$f'(x) = \frac{-48}{(6x+2)^2} = -48(6x+2)^{-2}$$

$$f''(x) = 96(6x+2)^{-3} \cdot 6$$

$$> 0 \quad x > -2/6$$

$$< 0 \quad x < -2/6$$