

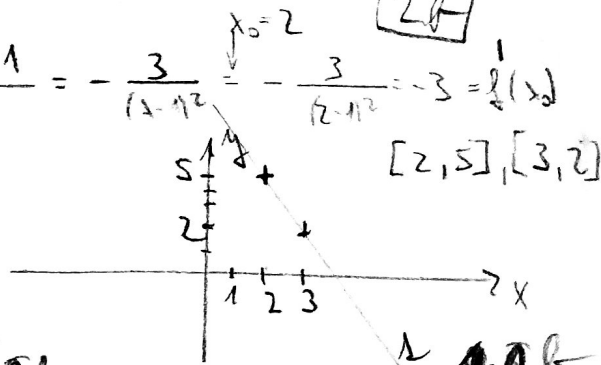
MINITEST 9 System (RESEKUR)

A. (9:15) $f(x) = \frac{2x+1}{x-1}$, $x_0 = 2$

$$f'(x) = \left(\frac{2x+1}{x-1} \right)' = \frac{2(x-1) - (2x+1) \cdot 1}{(x-1)^2} = \frac{2x-2-2x-1}{(x-1)^2} = -\frac{3}{(x-1)^2}$$

$$f(x_0) = \frac{2 \cdot 2 + 1}{2-1} = 5$$

$$L: g(x) = f'(x_0)(x-x_0) + f(x_0) = -\frac{3}{x-2} + 5$$

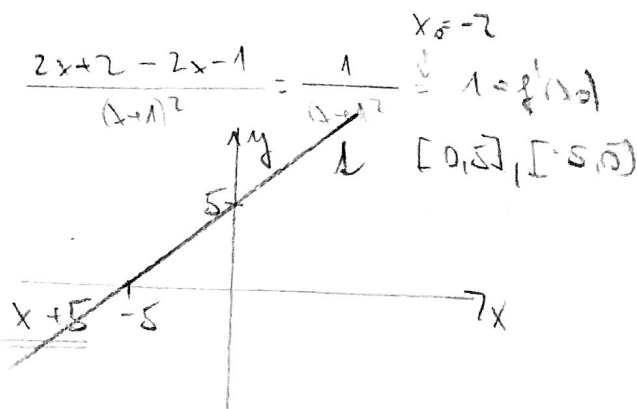


B. (12:40) $f(x) = \frac{2x+1}{x+1}$, $x_0 = -2$

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

$$f(x_0) = \frac{2 \cdot (-2) + 1}{-2+1} = 3$$

$$L: g(x) = f'(x_0)(x-x_0) + f(x_0) = 1 \cdot (x - (-2)) + 3 = x + 5$$



Form: $(u/v)' = u'v + uv'$

$$\left(u \frac{1}{v} \right)' = u' \frac{1}{v} + u \left(\frac{1}{v} \right)' = u' \frac{1}{v} + u \left(\frac{v^{-1}} \right)' = \frac{u'}{v} - \frac{uv'}{v^2} = \frac{u'v - uv'}{v^2}$$

$$\hookrightarrow \left(\frac{u}{v} \right)' = \frac{u'v - uv'}{v^2}$$