

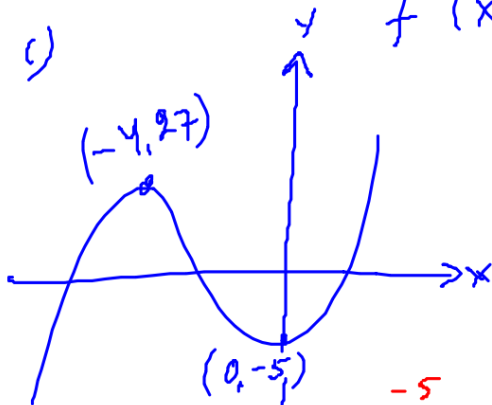
216. $f(x) = x^3 + 6x^2 - 5$

$f'(x) = 3x^2 + 12x = 0$

$a=3 \quad b=12 \quad c=0$

$x = \frac{-12 \pm \sqrt{144 - 4 \cdot 3 \cdot 0}}{2 \cdot 3} = \begin{cases} 0 \\ -4 \end{cases}$

1 p



	-5	-4	-1	0	1
f'	+		-		+
f	↗		↘		↗
		max		min	

$3 \cdot (-1)^2 + 12 \cdot (-1) = -9$

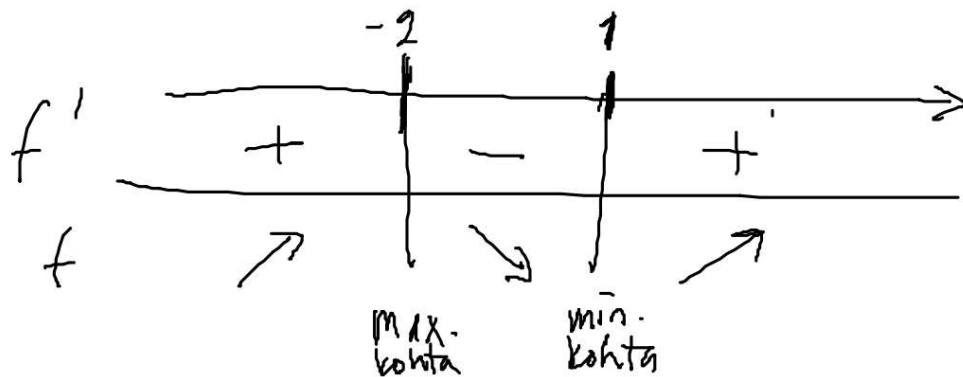
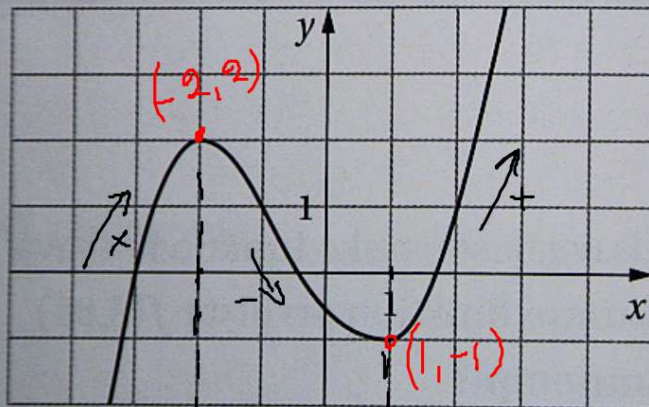
b) $x = -4$ max. kohta
 $x = 0$ min. kohta

$f(-4) = \text{max. arvo} = 97$

$f(0) = \text{min. arvo} = -5$

a) kasvava kun $x < -4$ tai $x > 0$
 vähenevä kun $-4 < x < 0$

213. Laadi funktion f kulkukaavio.



Kuvaajasta:
 max. arvo = 2
 min. arvo = -1