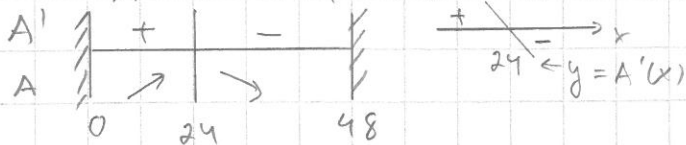


sitauksen piste-ala:

$$A(x) = xy = x(144 - 3x) = 144x - 3x^2$$

A jäll. j. deriiv. väl. ] 0, 48 [

$$A'(x) = 144 - 6x = 0 \quad \Leftrightarrow x = \frac{144}{6} = 24$$



$$y = 144 - 3 \cdot 24 = 72$$

Var. <sup>max</sup> Pöytä vasten  $\perp$  sein:  $x = 24$  m

raaman suuntainen sein:  $y = 72$  m

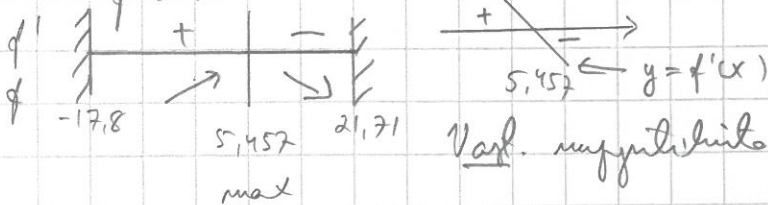
10.14	hinta (e)	myyntimäärä	myyntivoitto
alusse	8,9	760	$(8,9 - 3,5) \cdot 760$
lopussa	$8,9 + x \cdot 0,5$	$760 - x \cdot 35$	$(8,9 + x \cdot 0,5 - 3,5) \cdot (760 - x \cdot 35)$
			$= -17,5x^2 + 191x + 4104 = f(x)$

f rajoitusteet:  $8,9 + x \cdot 0,5 = 0 \quad \Leftrightarrow x = -17,8$

$$760 - x \cdot 35 = 0 \quad \Leftrightarrow x = \frac{760}{35} = 21,71$$

f jäll. j. deriiv. väl.  $[-17,8 ; 21,71]$

$$f'(x) = -35x + 191 = 0 \quad \Leftrightarrow x = \frac{191}{35} = 5,457$$



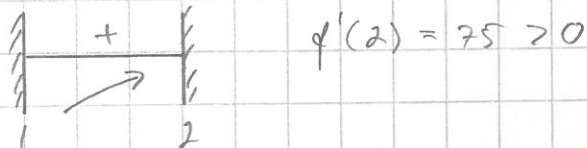
Var. myyntihinta  $8,9 + \frac{191}{35} \cdot 0,5 \approx 11,629 \approx 11,6$  (e)

10.17

$$x^5 - 5x + a = 0$$

$= f(x)$ , f jäll. j. deriiv. R:llä

$$f'(x) = 5x^4 - 5 = 0 \quad \Leftrightarrow x^4 = 1 \quad \sqrt[4]{\quad} \quad \Leftrightarrow x = \pm 1$$



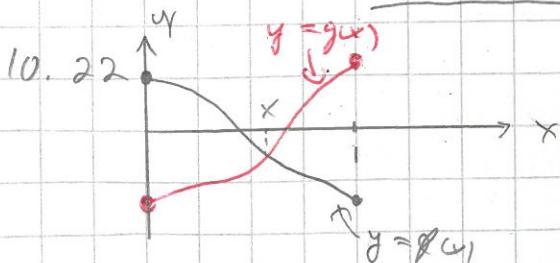
{ f aidosti kasvava väl. [1, 2]

{ f jätkevä

$$f(1) = 1^5 - 5 \cdot 1 + a = a - 4 < 0 \quad \Leftrightarrow a < 4$$

$$f(2) = 2^5 - 5 \cdot 2 + a = a + 22 > 0 \quad \Leftrightarrow a > -22$$

$$\Rightarrow -22 < a < 4$$



$$f(x) = g(x) \quad \Leftrightarrow \underbrace{f(x) - g(x)}_{h(x)} = 0$$

$$h(0) = \underbrace{f(0)}_{22} - \underbrace{g(0)}_{0} > 0$$