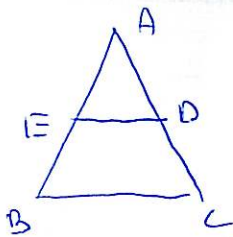


1.8
(694)



$$\frac{AE}{BE} = \frac{AD}{DC}$$

$$\frac{y}{b-y} = \frac{b}{x} \Rightarrow yx = b^2 - by$$

$$y(x+b) = b^2 \rightarrow y = \frac{b^2}{x+b}$$

$$\frac{AE}{AB} = \frac{ED}{BC} \rightarrow \frac{y}{b} = \frac{ED}{x} \rightarrow ED = \frac{yx}{b} = \frac{xb^2}{b(x+b)} = \frac{xb}{x+b}$$

$$BE = DC = b - y = b - \frac{b^2}{x+b} = \frac{bx + b^2 - b^2}{x+b} = \frac{bx}{x+b}$$

(2)

$$f = BE + ED + DC - BC = \frac{3xb}{x+b} - x = \frac{3xb - x^2 - bx}{x+b} = \frac{2xb - x^2}{x+b}$$

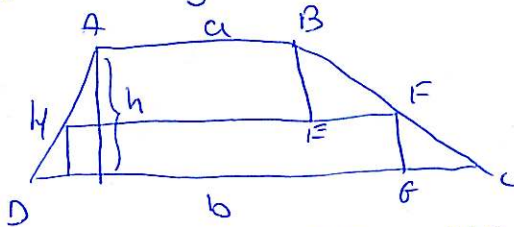
$$f' = \frac{(2b - 2x)(x+b) - (2xb - x^2)}{(x+b)^2} = 0$$

$$0 = 2bx + 2b^2 - 2x^2 - 2xb - 2xb + x^2 = -x^2 - 2bx + 2b^2$$

$$x_{1,2} = \frac{2b \pm \sqrt{4b^2 + 8b^2}}{-2} = \frac{2b \pm \sqrt{12b^2}}{-2} = -b \pm \sqrt{3}b = \begin{cases} -b - \sqrt{3}b \\ \sqrt{3}b - b \end{cases}$$

x	$\sqrt{3}b - \frac{1}{2}b$	$\sqrt{3}b - b$	$\sqrt{3}b$
y'	+		-
y	max		

1.7
(697)



a רוחב התחתון
b רוחב העליון
h גובה

$$HF \parallel AB \parallel DC \Rightarrow \frac{BF}{BC} = \frac{HF}{DC} = \frac{x}{b}$$

$$\triangle BEF \sim \triangle FGC$$

$$\frac{BF}{BC} = \frac{BE}{FG} \Rightarrow \frac{x}{b} = \frac{y}{h-y} \Rightarrow y = \frac{xh}{b}$$

$$\frac{x}{b} = \frac{y}{h-y} \Rightarrow xh = by \Rightarrow y = \frac{xh}{b}$$

$$f = S_{\text{trapezoid}} = S_{\text{triangle BEF}} + S_{\text{trapezoid HFGC}} = AB \cdot BE + HF \cdot FG = a \cdot y + x \cdot (h - y) = \frac{axh}{b} + x \left(h - \frac{xh}{b} \right) =$$

$$= \frac{axh}{b} + x \left(\frac{bh - xh}{b} \right) = \frac{axh}{b} + \frac{xbh - x^2h}{b} = \frac{x(ah + bh) - x^2h}{b}$$

$$0 = f' = \frac{1}{b} [(ah + bh) - 2xh] = \frac{1}{b} [ah + bh - 2xh]$$

$$2xh = ah + bh$$

$$x = \frac{h(a+b)}{2h} = \frac{a+b}{2}$$

כאשר $x = \frac{a+b}{2}$ מקבלים מקסימום

x	$\frac{a+b}{2}$	$\frac{a+b}{2}$	a+b
y'	+		=
y	max		

מקסימום