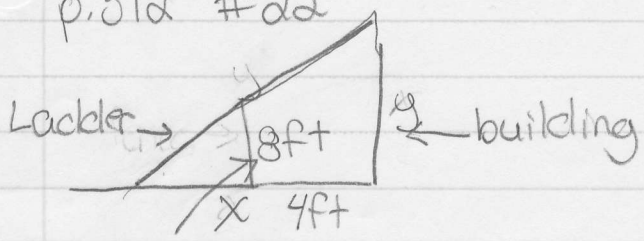
Melanie Accardo

p.312 #22



fence

$\sqrt{(x+4)^2+y^2}$

similar triangles

$\frac{8}{y} = \frac{x}{4+x} \Rightarrow y = \frac{3+8x}{x}$

$f(x) = (x+4)^2 + \left(\frac{32}{x}+8\right)^2$

$f'(x) = 2(x+4)\cdot 1 + 2\left(\frac{32}{x}+8\right)\cdot\frac{-32}{x^2}$

$2(x+4)\cdot 1 + 2\left(\frac{32}{x}+8\right)\cdot\frac{-32}{x^2} = 0$

$x = -4 \qquad x = 4.2^{2/3}$

$x = 6.34$

$\sqrt{(6.34+4)^2+y^2}$

$(6.34+4)+y$

$12.36 = y$ = building

$f(x) = (6.34+4)^2 + \left(\frac{32}{6.34}+8\right)^2$

$= \sqrt{277.148}$

$f(x) = 16.65$ ft = ladder