EWS

Extremwertaufgaben: Haupt- (HB) und Neben- (NB) Bedingung

1) NB $12 = x + y$ HB a) $x \cdot y \to max$

b) $x^2 + y^2 \to min$

c) $x^2 + 2y^2 \to min$

d) $x^3 \cdot y \to max$

2) HB: $A = x \cdot y \to max$

a) NB: $U = 2x + 2y = 1\,m$

b) NB: $d = \sqrt{x^2 + y^2} = 1\,m$

3) NB: $A = a \cdot b = 100\,cm^2$

a) HB: $U = 2a + 2b \to min$

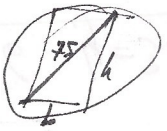
b) HB: $d = \sqrt{x^2 + y^2} \to min$

4) HB: $V = (a - 2x)(b - 2x) \cdot x \to max$

a) NB: $a = 90 \quad b = 25$

b) NB: $a = b = 60$

5) HB: Tragfähigkeit $= k \cdot b \cdot h^2 \to max$ NB: $b^2 + h^2 = 75^2$



6) NB: $a + c = 90$ HB: $V = a \cdot a \cdot c \to max$

7) HB: $O = 2a^2 + 2ah \to min$ HB: $V = a^2 h = 1\,dm^3$

8) HB: $O = 2r^2\pi + 2r\pi \cdot h \to min$ HB: $V = r^2\pi \cdot h = 250\pi$.

9) HB: $O = r^2\pi + 2r\pi h \to min$ HB ——//——

10) HB: $O = 2ab + 2ah + 2bh \to Min$ NB: $V = 800 = abh$.

$h = 4a$