Berechnen Sie bei den folgenden gleichschenkligen Trapezen die fehlenden Grössen:

a) $a = 37.2,\quad c = 15.8,\quad \alpha = 62°$

b) $a = 24,\quad b = 9,\quad \alpha = 64.8°$

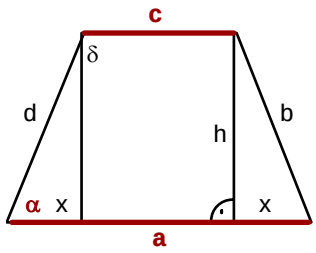
c) $b = 61,\quad c = 37,\quad h = 17$

d) $c = 29,\quad h = 14,\quad \alpha = 71.5°$

e) $a = 45,\quad c = 33,\quad$ Diagonale $e = 89$

Die folgenden Aufgaben lassen sich auf verschiedene Arten lösen.
Alle Resultate sind gerundet. Ich habe aber für weitere Rechnungen die exakten Werte benutzt, was kleine Abweichungen im Resultat erklären mag.

a) $a = 37.2,\quad c = 15.8,\quad \alpha = 62°$



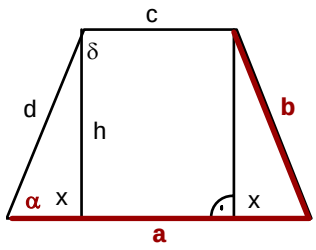
$$x = \frac{a-c}{2} = 10.7$$

$$\cos\alpha = \frac{x}{d} \quad\Rightarrow\quad d = c = \frac{x}{\cos\alpha} = 22.79$$

$$\tan\alpha = \frac{h}{x} \quad\Rightarrow\quad h = x\tan\alpha = 20.12$$

$$\delta = \gamma = 180° - \alpha = 118°$$

b) $a = 24,\quad b = 9,\quad \alpha = 64.8°$



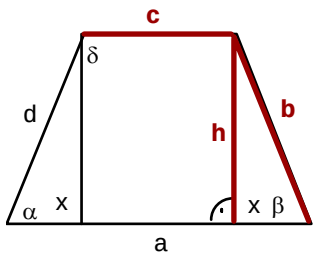
$$\sin\beta = \frac{h}{b} \quad\Rightarrow\quad h = b\sin\beta = 8.14$$

$$\tan\beta = \frac{h}{x} \quad\Rightarrow\quad x = \frac{h}{\tan\beta} = 3.83$$

$$c = a - 2x = 16.34$$

$$\delta = \gamma = 180° - \alpha = 115.2°$$

c) $b = 61, \quad c = 37, \quad h = 17$



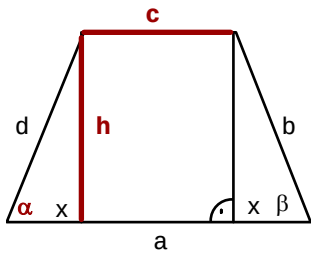
$$\sin\beta = \frac{h}{b} \quad \Rightarrow \quad \beta = \alpha = 16.18°$$

$$\delta = \gamma = 180° - \alpha = 163.82°$$

$$\cos\beta = \frac{x}{b} \quad \Rightarrow \quad x = b\cos\beta = 58.58$$

$$a = c + 2x = 154.17°$$

d) $c = 29, \quad h = 14, \quad \alpha = 71.5°$



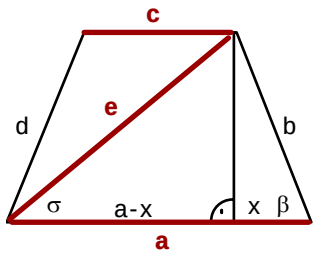
$$\delta = \gamma = 180° - \alpha = 108.5°$$

$$\sin\alpha = \frac{h}{d} \quad \Rightarrow \quad d = b = \frac{h}{\sin\alpha} = 14.76$$

$$\tan\alpha = \frac{h}{x} \quad \Rightarrow \quad x = \frac{h}{\tan\alpha} = 4.68$$

$$a = c + 2x = 38.37$$

e) $a = 45, \quad c = 33, \quad e = 89$



$$x = \frac{a - c}{2} = 6$$

$$h^2 = e^2 - (a - x)^2 \quad \Rightarrow \quad h = 80$$

$$\tan\beta = \frac{h}{x} \quad \Rightarrow \quad \beta = \alpha = 85.71°$$

$$\delta = \gamma = 180° - \alpha = 94.29°$$

$$\cos\beta = \frac{x}{b} \quad \Rightarrow \quad b = d = \frac{x}{\cos\beta} = 13.69$$