3.12 Trapezoid with Inscribed Circle

Bases of a trapezoid: a, b

Lateral sides: c, d

Midline: q Altitude: h

Diagonals: d_1, d_2

Angle between the diagonals: φ

Radius of inscribed circle: r

Radius of circumscribed circle: R

Perimeter: L

Area: S

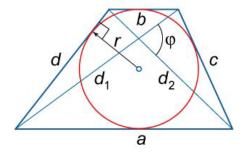


Figure 23.

230.
$$a+b=c+d$$

231.
$$q = \frac{a+b}{2} = \frac{c+d}{2}$$

232.
$$L = 2(a+b) = 2(c+d)$$

233.
$$S = \frac{a+b}{2} \cdot h = \frac{c+d}{2} \cdot h = qh$$
,
 $S = \frac{1}{2} d_1 d_2 \sin \varphi$.