

### 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:  $\varphi$

Radius of inscribed circle:  $r$

Radius of circumscribed circle:  $R$

Perimeter:  $L$

Area:  $S$

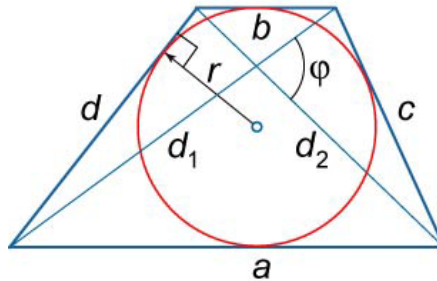


Figure 23.

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

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

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

**233.**  $S = \frac{a + b}{2} \cdot h = \frac{c + d}{2} \cdot h = qh,$

$$S = \frac{1}{2} d_1 d_2 \sin \varphi.$$