

3.11 Isosceles Trapezoid with Inscribed Circle

Bases of a trapezoid: a, b

Leg: c

Midline: q

Altitude: h

Diagonal: d

Radius of inscribed circle: R

Radius of circumscribed circle: r

Perimeter: L

Area: S

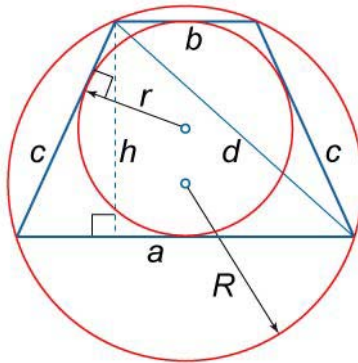


Figure 22.

223. $a + b = 2c$

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

225. $d^2 = h^2 + c^2$

$$226. \quad r = \frac{h}{2} = \frac{\sqrt{ab}}{2}$$

$$227. \quad R = \frac{cd}{2h} = \frac{cd}{4r} = \frac{c}{2} \sqrt{1 + \frac{c^2}{ab}} = \frac{c}{2h} \sqrt{h^2 + c^2} = \frac{a+b}{8} \sqrt{\frac{a}{b} + 6 + \frac{b}{a}}$$

$$228. \quad L = 2(a+b) = 4c$$

$$229. \quad S = \frac{a+b}{2} \cdot h = \frac{(a+b)\sqrt{ab}}{2} = qh = ch = \frac{Lr}{2}$$