Find the radius of a circle inscribed in a 5-12-13 triangle.

Solution:

Use the Pythagorean theorem to see whether this triangle is right:

$$a^2 + b^2 = c^2$$

$$5^2 + 12^2 = 13^2 \Longrightarrow 169 = 169$$

Let r be radius, S – area of the triangle, p – half of perimeter

$$r = \frac{S}{p}$$

$$S = \frac{1}{2}ab = \frac{1}{2} \cdot 5 \cdot 12 = 30$$

$$p = \frac{5 + 12 + 13}{2} = 15$$

$$r = \frac{30}{15} = 2$$

Answer: radius of an inscribed circle equals 2.