

Exercise 46

The circumference C of a circle is a function of its radius given by $C(r) = 2\pi r$. Express the radius of a circle as a function of its circumference. Call this function $r(C)$. Find $r(36\pi)$ and interpret its meaning.

Solution

The given equation for the circumference of a circle is given by

$$C = 2\pi r.$$

Solve for r by dividing both sides by 2π .

$$\frac{C}{2\pi} = r$$

Therefore,

$$r(C) = \frac{C}{2\pi},$$

and

$$r(36\pi) = \frac{36\pi}{2\pi} = 18.$$

This means that for a circle to have a circumference of 36π , the radius needs to be 18 units long.