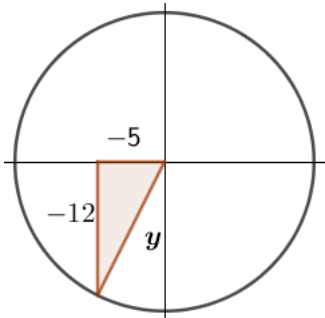


If  $\tan x = \frac{12}{5}$  and  $\pi < x < \frac{3\pi}{2}$ , find the value of  $\operatorname{cosec} x$

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$x$  is in the third quadrant

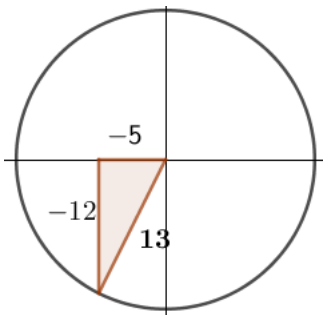


Using Pythagoras' Theorem:

$$y^2 = (-12)^2 + (-5)^2$$

$$y^2 = 144 + 25 = 169$$

$$y = \sqrt{169} = 13$$



$$\operatorname{cosec} x = \frac{1}{\sin x}$$

$$\operatorname{cosec} x = \frac{1}{\frac{-12}{13}} = -\frac{13}{12}$$