Answer on Question#42531 – Math - Calculus

Question:

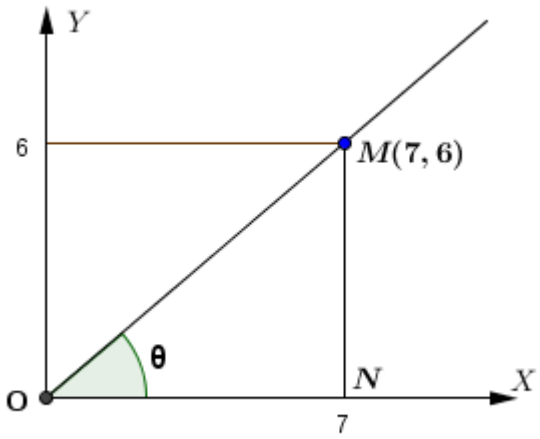
Find the value of sec Θ for the angle shown.
A line is drawn from the origin through the point (7, 6). The angle Θ is given as the measurement from the positive x axis counterclockwise to the line.

$\sec\theta = \frac{7\sqrt{85}}{85}$

$\sec\theta = \frac{6}{7}$

$\sec\theta = \frac{7}{6}$

$\sec\theta = \frac{\sqrt{85}}{7}$



Solution:

Consider triangle OMN

By definition, $\sec\theta$ is the ratio

$$\sec\theta = \frac{OM}{ON}$$

Since $ON = 7$ and $NM = 6$, by Pythagorean theorem

$$OM = \sqrt{ON^2 + NM^2} = \sqrt{7^2 + 6^2} = \sqrt{49 + 36} = \sqrt{85}.$$

So

$\sec\theta = \frac{\sqrt{85}}{7}$

Answer:

$\sec\theta = \frac{\sqrt{85}}{7}$