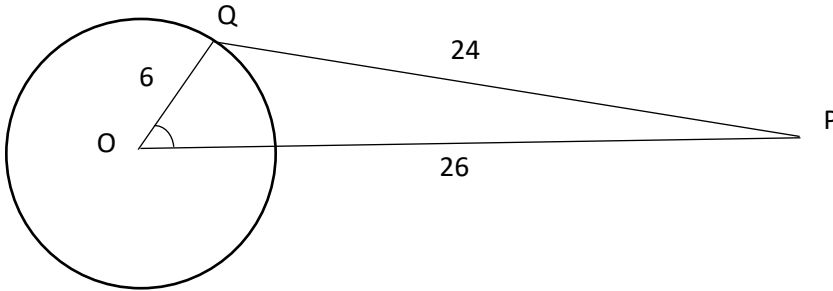


Answer on Question #77612 – Math – Trigonometry

Question. A connecting rod 24 inches in length is attached at Q to a drive wheel whose radius is 6 in. when OP, the distance from P to the center of the wheel, is 26 inches, find the angle QOP.



Solution. By law of cosines:

$$QP^2 = OQ^2 + OP^2 - 2 * OQ * OP * \cos \widehat{QOP}$$

From this we can extract $\cos \widehat{QOP}$:

$$\cos \widehat{QOP} = \frac{OQ^2 + OP^2 - QP^2}{2 * OQ * OP}$$

Calculations:

$$\cos \widehat{QOP} = \frac{6^2 + 26^2 - 24^2}{2 * 6 * 26} = \frac{136}{312} = \frac{17}{39}$$

Now we can write the answer:

$$\widehat{QOP} = \arccos \frac{17}{39}$$

Answer: $\widehat{QOP} = \arccos \frac{17}{39}$.