Task:

The Simpson method for angular speed is not radians per second.

It is degrees per second: ωD=r·D (ωD is known as Doh-mega).

In order to communicate effectively with his coworkers, Homer needs to

convert from Doh-mega to ω and from ω to Doh-mega.

(a) Write a formula to convert measurements in degrees per second (ωD) to

radians per second (ω).

(b) Write a formula to convert measurements in radians per second (ω) to

degrees per second (ωD).

Solution:

We know that a straight angle is 180 degrees and it has a measure of π radians. Therefore 180°
= π radians. Hence we get $1 \; rad = (\frac{180}{\pi})°$, and $1° = \left(\frac{\pi}{180}\right) rad$.

Based on the above relations, we get:

(a)

$$\omega = \omega D \cdot \left(\frac{\pi}{180}\right) rad = \left(\frac{\pi \cdot \omega D}{180}\right) rad \approx (0.0174 \cdot \omega D) \; rad$$

(b)

$$\omega D = \omega \cdot \left(\frac{180}{\pi}\right)° = \left(\frac{180 \cdot \omega}{\pi}\right)° \approx (57.325 \cdot \omega)°$$

Answer: (a) $(0.0174 \cdot \omega D)$ and (b) $(57.325 \cdot \omega)$.