

## Problem 7.1

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b.) How does this rotation affect the shape of the earth?

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The earth rotates through  $2\pi$  radians in in 24 hours. The ratio with hours converted to seconds becomes:

$$\begin{aligned}\omega &= \frac{\text{angular displacement}}{\text{time}} \\ &= \frac{2\pi \text{ radians}}{(24 \text{ hours}) \left( \frac{3600 \text{ sec}}{\text{hour}} \right)} \\ &= 7.27 \times 10^{-5} \text{ radians/sec}\end{aligned}$$

b.) How does this rotation affect the shape of the earth?

It tends to make the earth oblate. It squashes it some.

Completely off-the-wall note: The Chilean earthquake earlier this year moved the earth's axis 3 inches taking 1.26 microseconds off the period of a day. Bizarre, eh?

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