P4.2-7) A disk rotates on a stationary shaft. The disk and shaft are connected by a bearing. This bearing is poorly lubricated and thus slows the disk down when the disk is rotating freely. The disk is initially rotating at 300 rpm at time $t = 0$ while rotating freely. The amount that the bearing slows the disk depends on the angular speed of the disk and is equal to $\alpha = -1.2\omega$ rad/s². How long does it take the disk to slow to 150 rpm?

<u>Given:</u>

<u>Find:</u>

<u>Solution:</u>

Write down the kinematic equation that relates α and ω.

Determine the time for the disk to slow to 150 rpm.

$t =$ _____