Example 1:  *Transformer and motional emf (cont.*)*  

determine whether $v_1$ and $v_2$ are positive, negative, or zero for  
i) $\omega t = 0$, ii) $\omega t = \pi/2$, and iii) $\omega t = 3\pi/2$.  

\[ \begin{align*} 
& \text{(i) Find } v(t) \text{ for } t > 0. \\
& \text{(ii) find the mutual inductance between the coil and the line of current.} 
\end{align*} \]
Example 2: *electromagnetic induction, self-inductance, resistance*
Work with your neighbor to develop a complete, physics-based circuit model of the system shown.
Example 3: *transformer and motional emf*

Before making any detailed calculations, determine whether the transformer emf will be zero. If non-zero, will it be negative or positive given the polarity shown?

Also, again before making any detailed calculations, determine whether the motional emf will be zero? If non-zero, will it be negative or positive given the polarity shown?

Find $v(t)$ for $t>0$.

*position of coil is shown for $t=0$*
Example 3: *transformer and motional emf (cont.)*