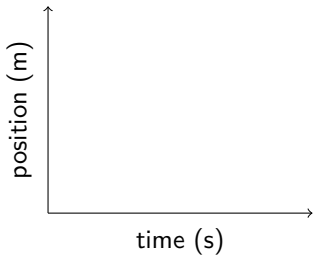
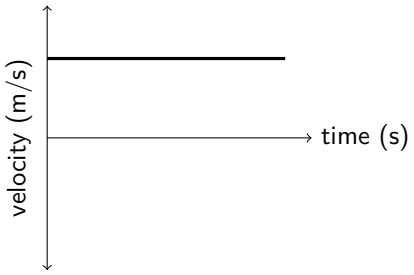
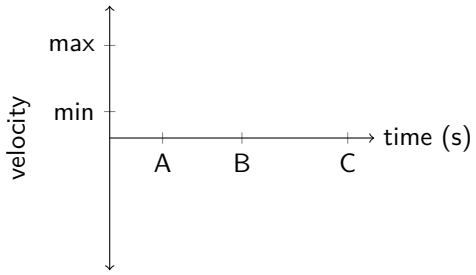
A blank set of axes, in one quadrant, with labels:



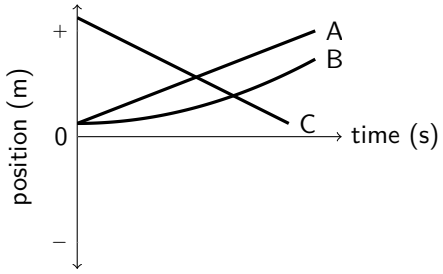
Two quadrants, with a graph, centered:



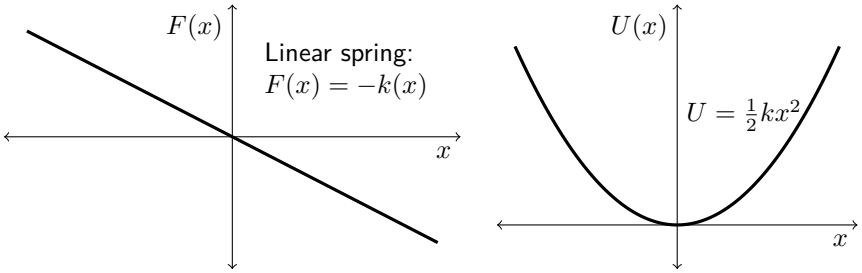
With some extra tick marks:



Two quadrants with sign labels, and several labeled curves:

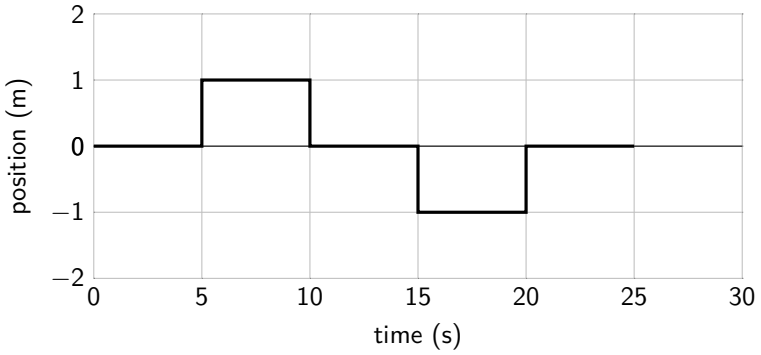


And, finally, four quadrants:

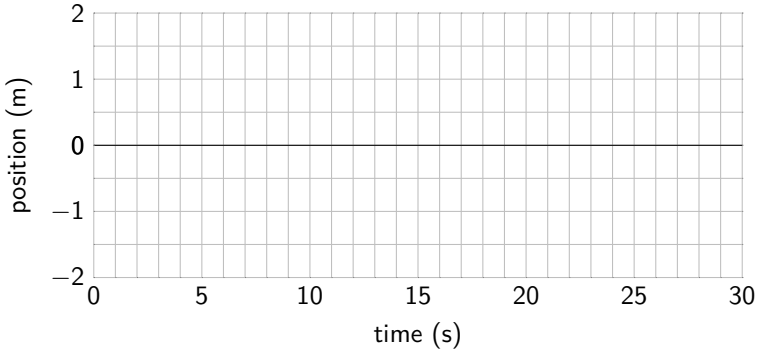


(Note that there's a little problem with the spacing above. The lab_axis environment puts a little `vspace` before and after each graph. When two graphs appear on the same line, as above, the vertical space between them gets shoved AFTER both graphs, making the vertical spacing after the graphs too large. It can be removed by `\vspace{-2em}`.

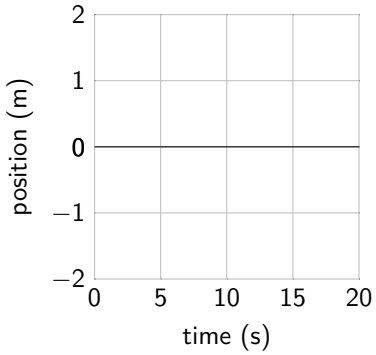
I also defined a style that includes a grid:

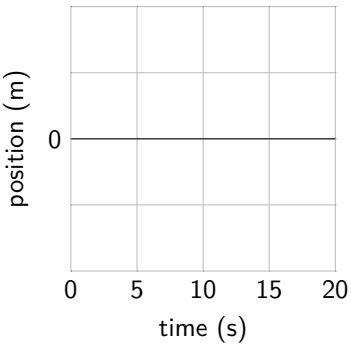


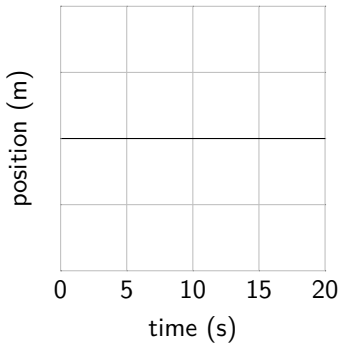
You can also add minor tick marks to it:

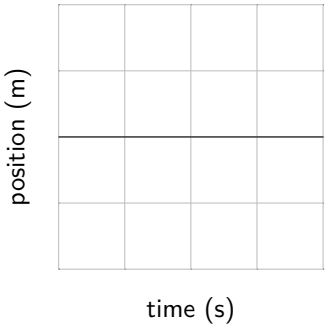


And you can make various labels disappear:

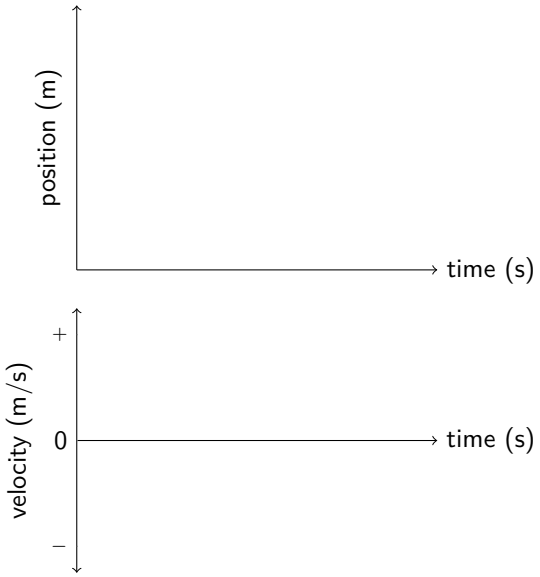




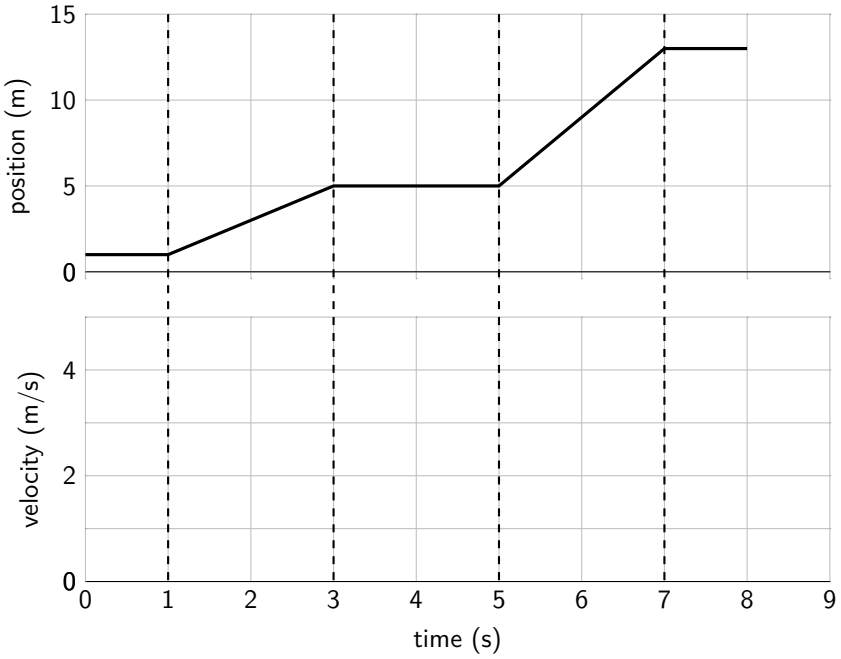


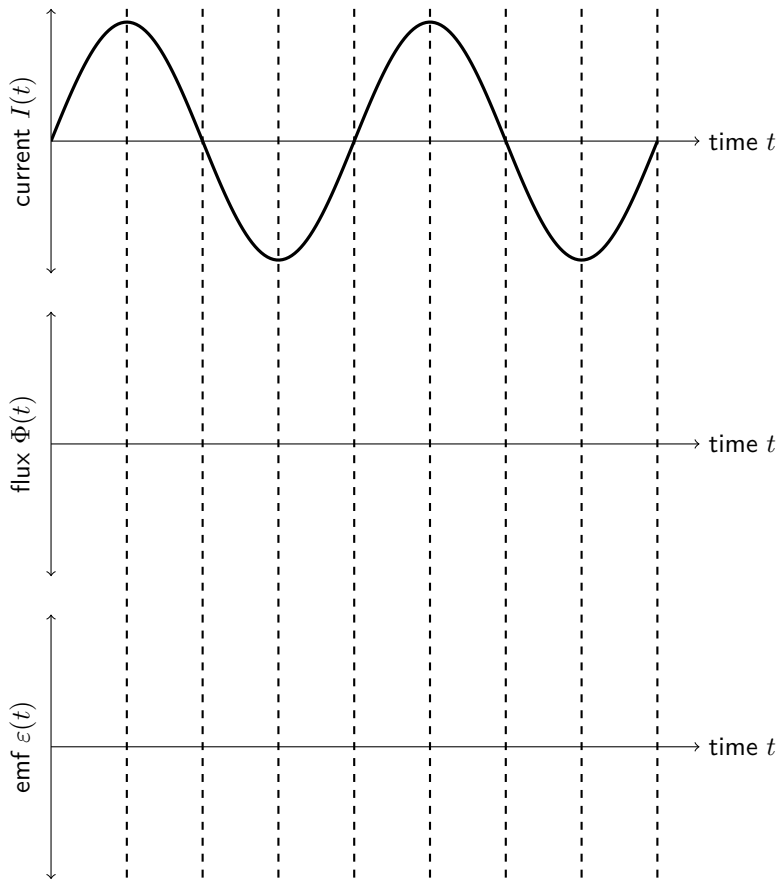


Note that the "groupplot" feature can be used to stack graphs:



Finally, you can drop alignment marks between graphs, as the next two examples show:




current $I(t)$
time t
flux $\Phi(t)$
time t
emf $\varepsilon(t)$
time t