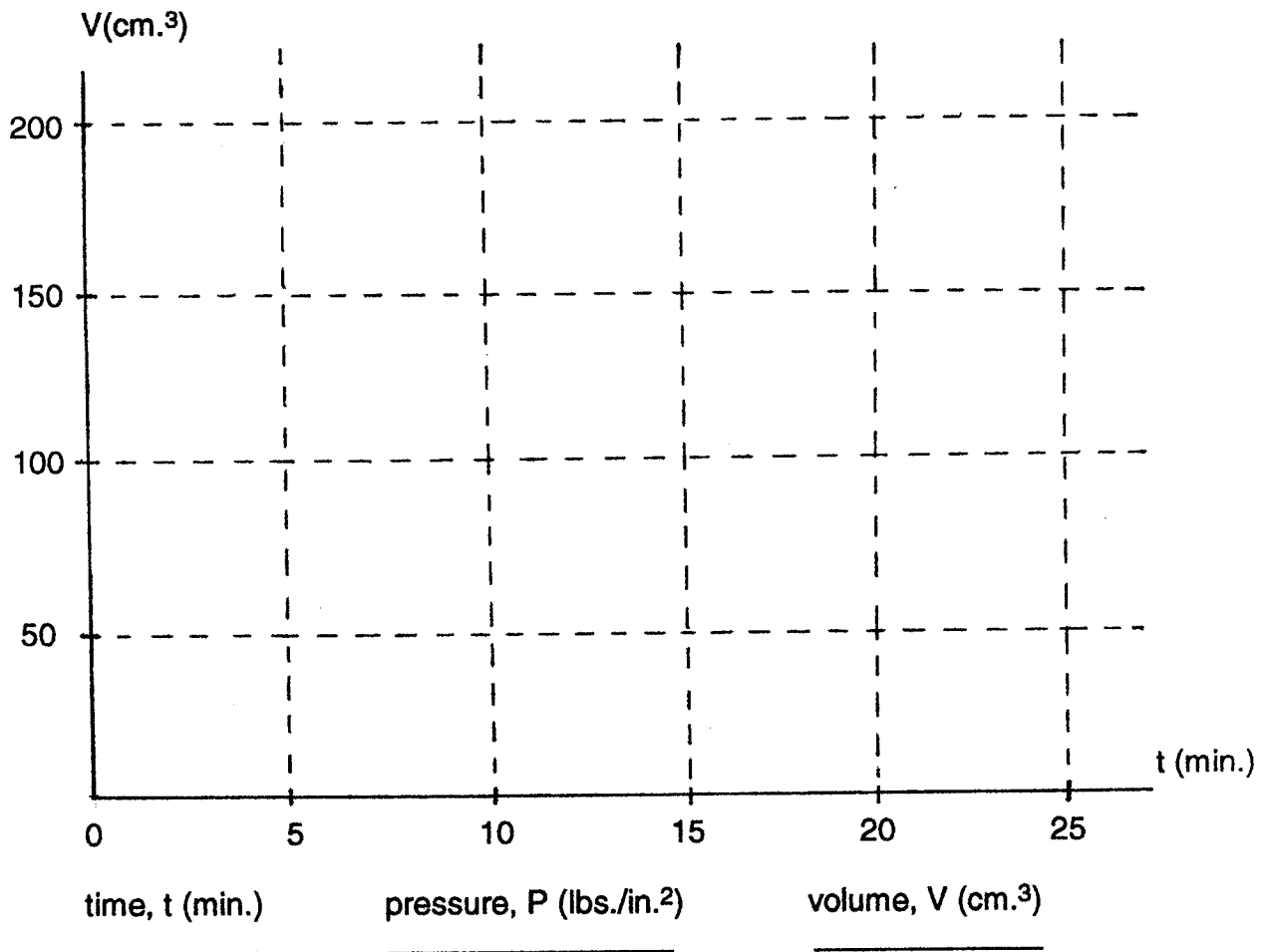A Practical Example of Functional Composition

According to Boyle's Law, at a constant temperature the volume V occupied by a fixed quantity of gas is inversely proportional to the applied pressure P. Assume that for a particular sample we have the following experimental relationships between volume V (cm.^{3}) and pressure P (lbs./in.^{2}) as well as between pressure P (lbs./in.^{2}) and time t (min.).
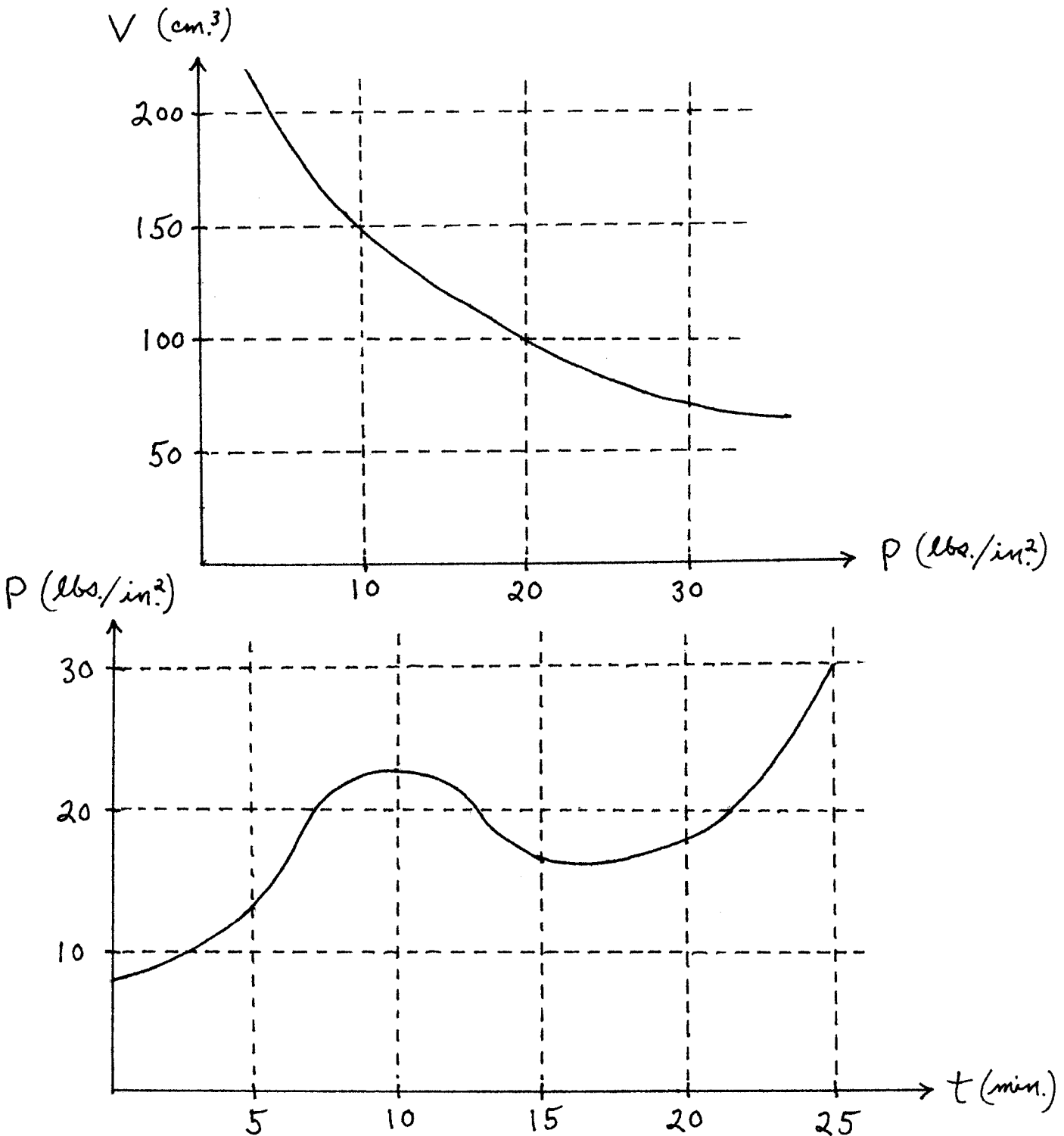
Use the grapical information on the previous page to sketch the relationship between volume V and time t. (Note that this will represent the graph of the functional composition $V = f(P) = f(g(t))$.)

V(cm.³)

200

150

100

50

0   5   10   15   20   25   t (min.)

time, t (min.)	pressure, P (lbs./in.²)	volume, V (cm.³)
0		
5		
10		
15		
20		
25		