

Graphical Models for Rates of Change

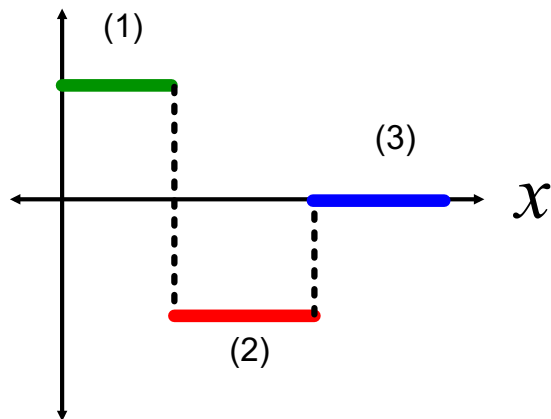
Sep 19/2016

(1) For a positive rate of change (positive slope),
the function is increasing.

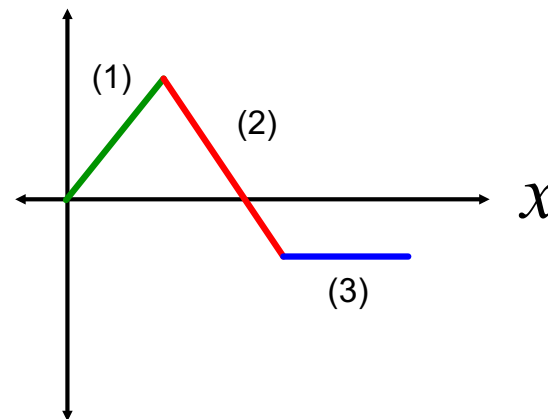
(2) For a negative rate of change (negative slope),
the function is decreasing.

(3) For zero rate of change (zero slope, horizontal line),
the function is constant.

RoC



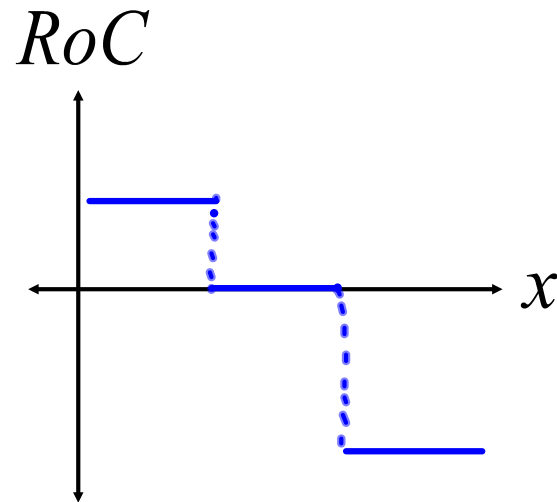
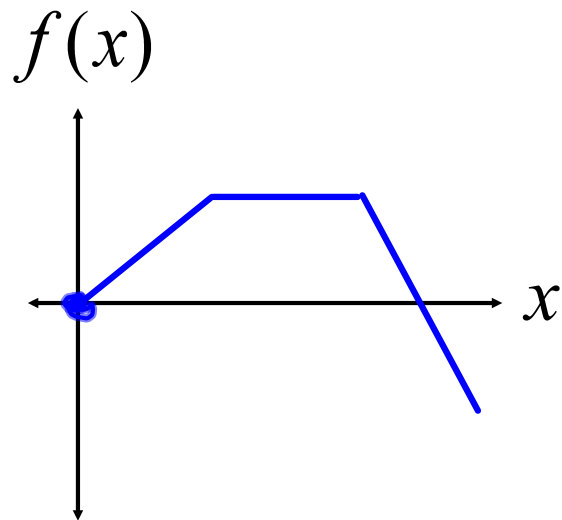
$f(x)$



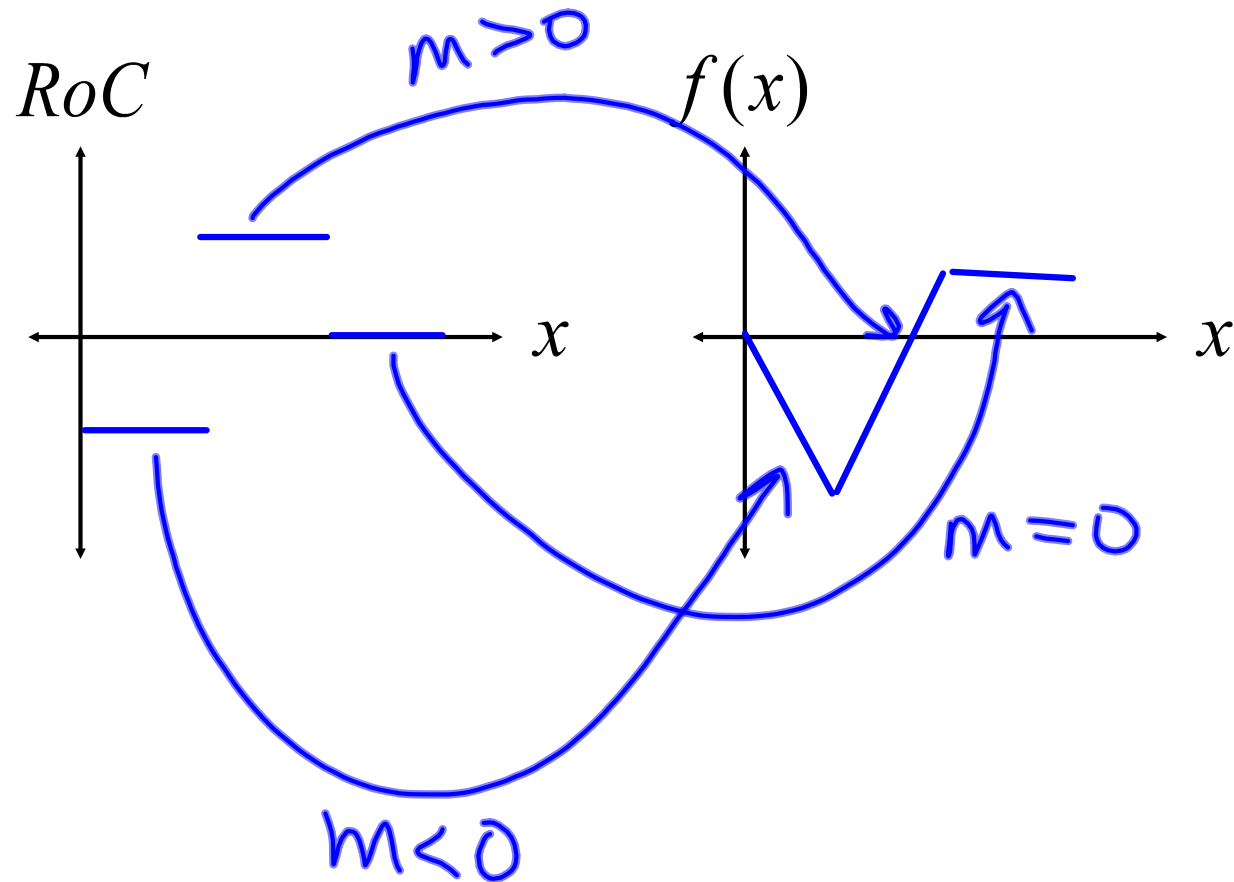
Graphical Models for Rates of Change

Ex.1 For each situation, sketch the graph for the original function and the rate of change.

(a) function increasing at a constant rate, then constant, then decreasing at a constant rate

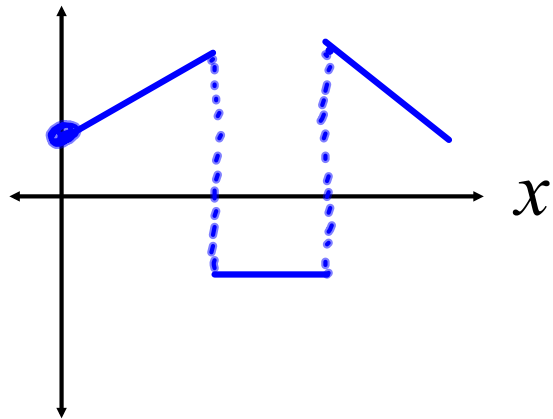


(b) rate of change constant and negative, then constant and positive, then zero

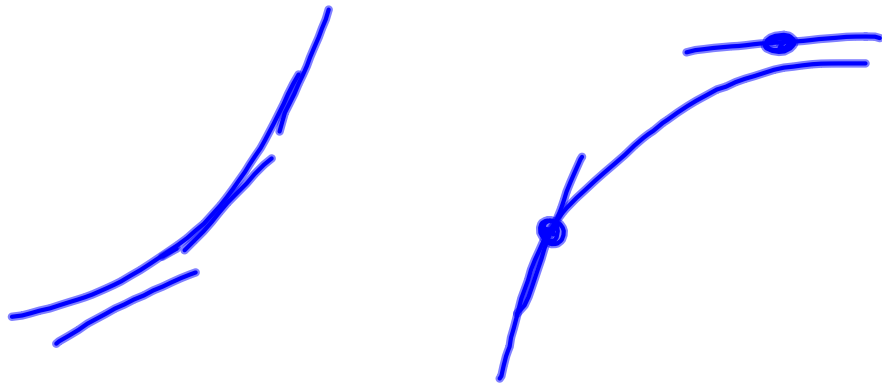
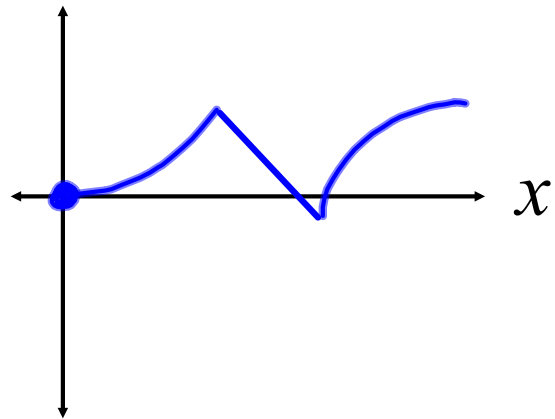


(c) rate of change increasingly positive, then constant and negative, then decreasingly positive

RoC



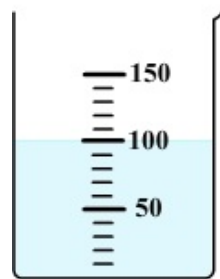
$f(x)$



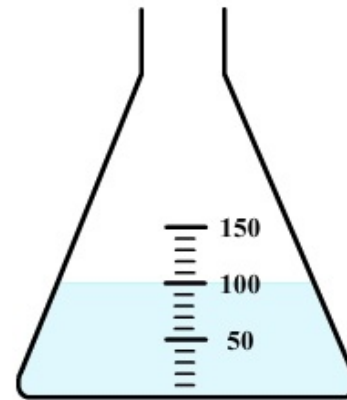
Ex. Water flows at a constant rate from a tap to fill a beaker, cylinder, and flask.

(a) Draw a rate of change in water level vs time graph for each container.

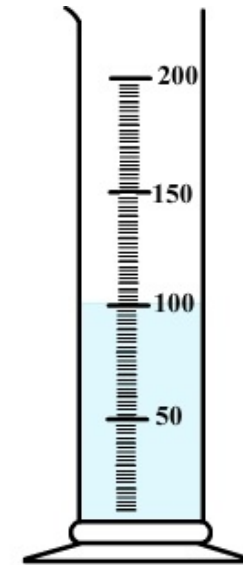
(b) Draw a water level $h(t)$ vs time graph for each.



(Beaker)



(Erlenmeyer)



(Measuring cylinder)

beaker

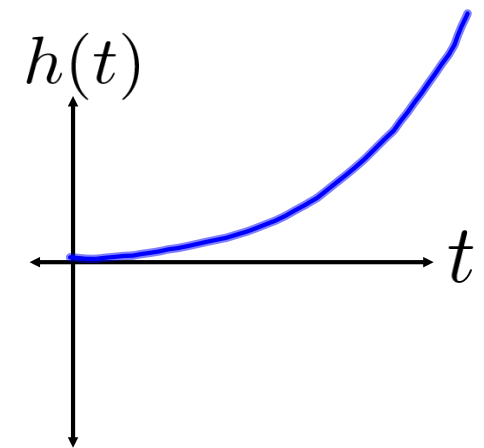
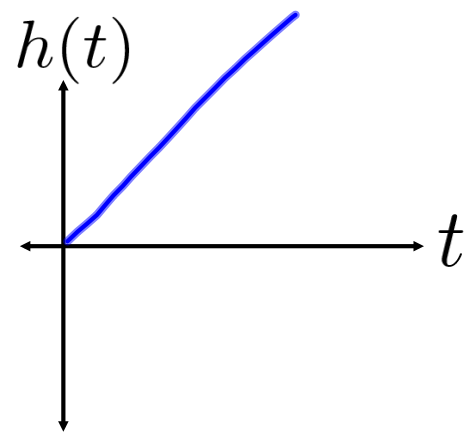
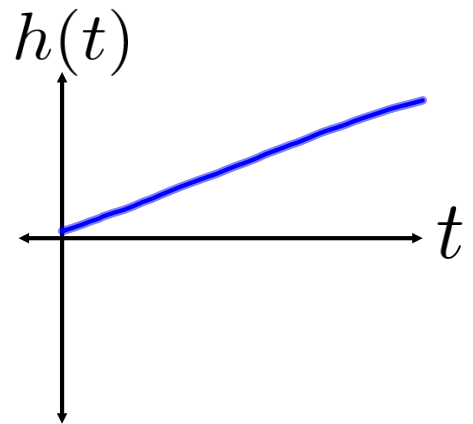
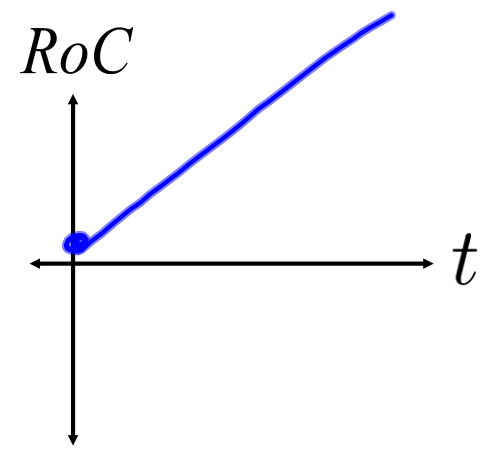
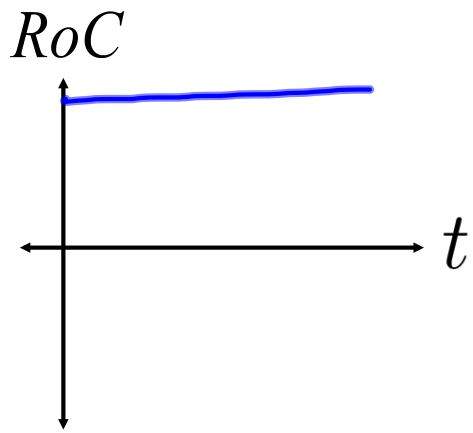
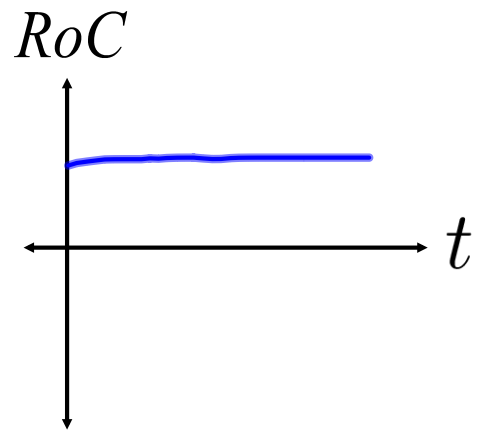
flask

cylinder

beaker

cylinder

flask



Assigned Work:

p.103 # 3, 5, 9, 10

p.111 # 2, 10, 13