

Chain Rule

Goal:

- Can describe chain rule as the measure of how much something two steps down changes.
- Can use chain rule along with the other derivative rules to find derivatives.

Terminology:

- Chain Rule

Consider a chain that has three blocks connected like illustrated below:



If we move the block furthest to the left, it will cause the block on the far right to move a related amount. We are interested in measuring that rate of change. It helps to use units

This is chain rule!

Example: If $A(x) = f(g(x)) + x^2$ and we know $f(2) = 4, f'(6) = 5, g(2) = 6, g'(2) = -3$. Determine $A'(2)$.
(Alternatively, you could write it as $\frac{d}{dx} A(x)|_{x=2}$)

Example: If $y = \sqrt{u+3}$ and $u = \frac{1}{w^2}$ and $w = x^4 - 4x^3 + 8x$. Find $\frac{dy}{du}$, $\frac{dy}{dw}$, and $\frac{dy}{dx}$

Practice Problems: 2.6: # 1-5 (do what you need), 6 (at least every other), 7-11



12, Problems Plus (page 102)