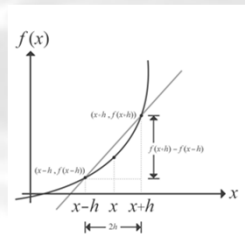


Differentiation

A Slippery Slope - Jerks You Around - Accelerates Your Mind



$\frac{d}{dt}$

Position
Velocity
Acceleration
Jerk
Snap
Crackle
Pop

<http://nm.mathforcollege.com>

1

Acceleration of a rocket



$$v = 2000 \log_e \left(\frac{14 \times 10^4}{14 \times 10^4 - 2100t} \right) - 9.8t$$

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2

Oil Spill



Time (s)	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Radius(m)	0	0.236	0.667	1.225	1.886	2.635	3.464	4.365	5.333	6.364	7.454

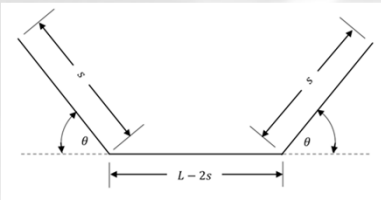
<http://nm.mathforcollege.com>

3

Optimum Angle of a Gutter



$$A(s, \theta) = [(L - 2s) + s \cos \theta] s \sin \theta$$



$$L = 0.21, s = \frac{L}{3}$$

$$A(\theta) = 0.0049[1 + \cos(\theta)] \sin(\theta)$$

4