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|  |  | .navigate |  |  | we don't need no .introduction \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  |
|  | [[home](http://docs.google.com/index.htm)]  [[abstract](http://docs.google.com/abs.htm)]  [[introduction](http://docs.google.com/intro.htm)]  [[hypothesis](http://docs.google.com/hypo.htm)]  [[experiment](http://docs.google.com/exp.htm)]  [[data](http://docs.google.com/data.htm)]  [[conclusion](http://docs.google.com/conc.htm)]  [[we recommend](http://docs.google.com/rec.htm)]  [[daily log](http://docs.google.com/log.htm)]  [[other](http://docs.google.com/other.htm)]  [[bibliography](http://docs.google.com/bib.htm)] |  |  | ***But, how do we solve differential equations?***         Some differential equations can be solved by integration; however, many cannot be solved my integration at all.  Thus, we must approximate f(x) when given f '(x)         The method we used to turn the differential equations into (x,y) coordinates was Euler's (pronounced oi-ler) method.  Basically, Euler's method is:         y(t + dt) = y(t) + y'(t)\*dt         So, given an initial value, (t0, y(t0)), Euler's method predicts y(t0 + dt), which can then be used to predict the point after that one.         There is another method used to approximate f(x) when given f '(x), which is the Runge-Kutta method.         The Runge-Kutta of the second order basically takes the slope at the midpoint between t and (t + dt) in order to better approximate the next point (Sharov).         y(t + dt) = y(t) + y'(t + .5\*dt)\*dt         However, most people use Runge-Kutta of the fourth order as it gives much more accurate results, at the cost of increased complexity.  [[prev](http://docs.google.com/intro2.htm)]|[next] |  |
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