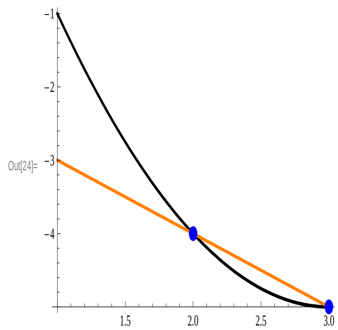


Figure 1: Secant line through $P = (2, -4)$ and $Q = (3, -5)$

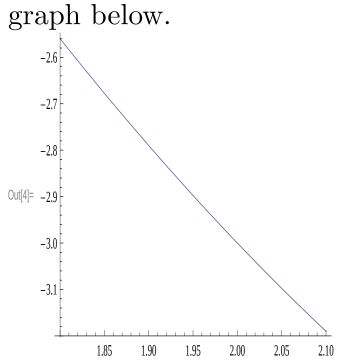
Now if you calculate the slopes of several secant lines what will you see? The slope of the secant line for the f(x) we picked is:

$$m_{sec} = \frac{f(x_1) - (-4)}{x_1 - 2} = \frac{f(x_1) + 4}{x - 2}$$

And here is a table with x_1 values greater than 2 for $f(x) = x^2 - 6x + 4$

x_1	$f(x_1)$	m_{sec}
3	-5	$\frac{-5+4}{3-2} = -1$
2.5	-4.75	$\frac{-4.75+4}{2.5-2} = -1.5$
2.1	-4.19	$\frac{-4.19+4}{2.1-2} = -1.9$
2.01	-4.0199	$\frac{-4.0199+4}{2.01-2} = -1.99$

So the slopes of these lines are not constant as we have seen in the constant velocity case. But if you zoom in tight on the point $(2, -4)$ you will get the graph below.



The graph looks very much like a straight line. In fact, the more you zoom in, the straighter it gets and the less it matters which two points are used to compute a slope. So here is the strategy: Let Q approach the point P, the secant lines will begin to approach the tangent line just as we see in the