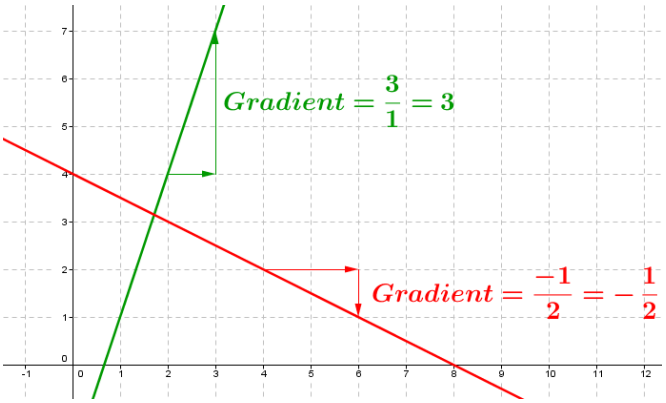
How steep is that curve?

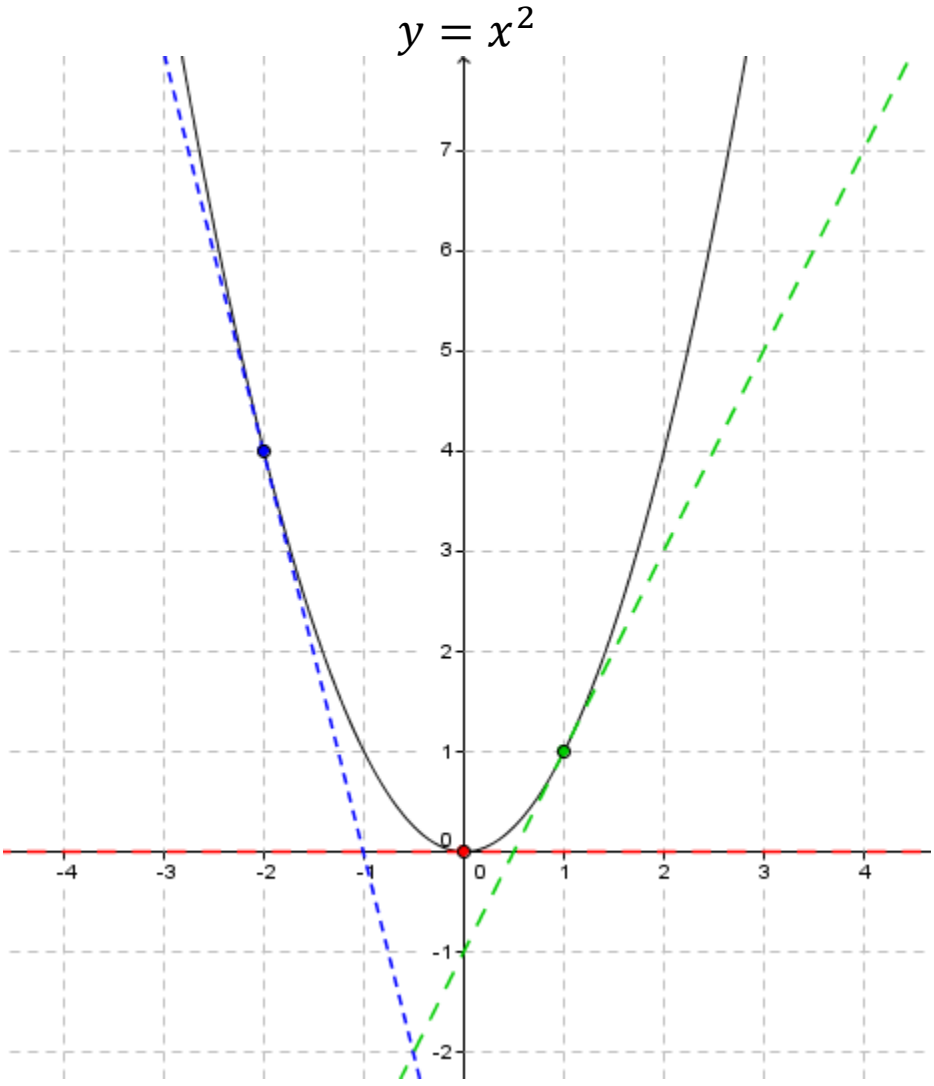
The **gradient of a line** is defined as $\frac{\textbf{Change in } y}{\textbf{Change in } x}$.

Gradient tells us the **rate of change** of *height* relative to *horizontal distance*.

For lines, this is always a **constant** like -0.5 or 3 because the height changes at a fixed rate.



Unlike a line, the gradient of a curve is **variable**. In fact, the gradient *depends on* x.
The **gradient of a curve** at any point is defined to be the **gradient of the tangent** at that point.



Using the tangent lines drawn, and the symmetry of the curve, write down the gradient of $y = x^2$ at each of the points:
What do you notice?

(x, y)	***Gradient***
$(-2, 4)$	
$(-1, 1)$	
$(0, 0)$	
$(1, 1)$	
$(2, 4)$	