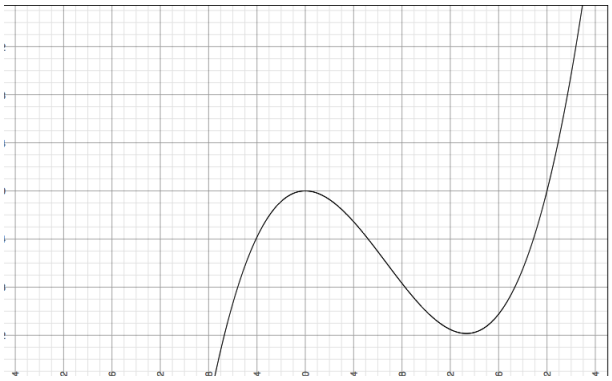
1. Find all points on the parabola $f(x) = x^2$ such that the tangent line at that point passes through the point $Q = (0, -4)$.
Hint: pick an arbitrary point on the parabola, like $P = (a, a^2)$. Use the concept of derivation in order to find the slop of the tangent line for P. Write down the general equation of the tangent line for that arbitrary point. Plug in Q in this equation in order to find a.

2. The graph of $f(x)$ is given as follow. Sketch a graph corresponding to $f'(x)$.



3. Find $h^{'}(x)$ for the function

$$h(x) = \frac{x^2 - x}{x + 1} \tag{1}$$

Hint: Use the quotient rule! $\frac{d}{dx}(\frac{f(x)}{g(x)}) = \frac{f^{'}(x)g(x) - g^{'}(x)f(x)}{g(x)^2}$