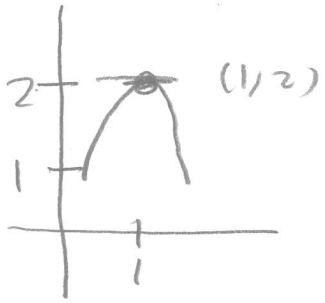
4. Draw the graph of a function that has $f(1) = 2$, $f'(1) = 0$ and $f''(x) < 0$.



5. Let a be a constant. What is the equation of the tangent line to the graph of $y = ax^2$ at the point where $x = 1$?

$y - y_0 = m(x - x_0)$

$x_0 = 1$

$y_0 = y(1) = a(1)^2 = a$

$y' = 2ax$

$m = y'(1) = 2a$

The equation is $y = 2ax - a$

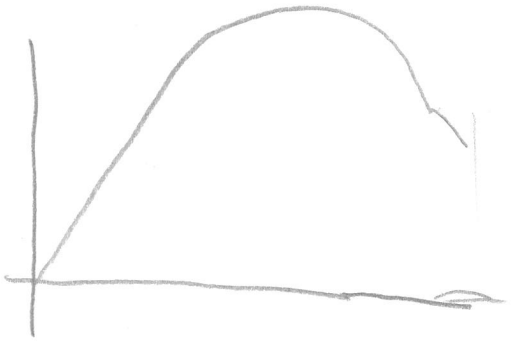
$y - a = 2a(x - 1)$

$y = 2ax - 2a + a = 2ax - a$

6. Let

$$f(x) = \frac{x + x^3}{3^x}$$

for $0 \leq x \leq 5$. Graph this with your calculator and make a sketch of the graph here:



What is the maximum of f? 1.1628483

What is the maximizer of f? 2.475287

What is the minimum of f? 0

What is the minimizer of f? 0