**Name:**                                          **Tutorial time:**

1. The limit $\displaystyle\lim_{h \to 0} \frac{\frac{1}{2+h} - \frac{1}{2}}{h}$ represents the derivative of a function $f$ at some point $a$.

   (a) Identify the function and the point.

   (b) Evaluate the limit.

2. (**Bonus**) Using the definition of the derivative, show that for any differentiable function $f$ and constant $c$, we have $(c \cdot f)'(x) = c \cdot f'(x)$

3. Compute the derivatives of the following functions:

   (a) $f(x) = 3x^3 - 2x^2 + \sqrt{2}$

   (b) $g(x) = x^2 \sin(x)$

   (c) $h(x) = \dfrac{x^2 + x}{2 - 3x}$