**Problem statement** If $f$ is a function, then a number $x_0$ is called a *fixed point* of $f$ exactly when $f(x_0) = x_0$.

a) Find all the fixed points of the following functions to three-place accuracy.

$$
\begin{align*}
    f(x) &= x^2 \\
    g(x) &= 3e^x - 2e^{-x} \\
    h(x) &= \frac{2}{3} \arctan x
\end{align*}
$$

b) Illustrate your answers graphically. Give three graphs, each one showing $x$, one of the functions above, and any fixed points.

c) Suppose that $f$ is a differentiable function and $f'(x) < 1$ for all $x$. Use the MVT to explain why $f$ can have no more than one fixed point. To which of the functions in a) does this general statement apply?