Exercise 1 Calc. : ✓

The functions f and g are defined to be

$$\begin{cases} f(x) = x^2 + 2x & x \in \mathbb{R} \\ g(x) = \dfrac{1}{x+2} & x \in \mathbb{R}, x \neq -2. \end{cases}$$

1. Draw a sketch of the graph of f labelling clearly the coordinates for the vertex and all points where the graph intersects the coordinate axes. — 3 marks

The range for g is written $g(x) \in \mathbb{R}, g(x) \neq 0$..

2. What is the range for f? — 2 marks
3. Write explicitly an expression for the composite function $g(f(x))$ and thus evaluate $g(f(2))$. — 1 mark
4. Solve the equation $g(f(x)) = \dfrac{1}{10}$. — 2 marks
5. Is the function $g(f(x-1))$ an odd function or an even function? Give a reason for your answer. — 2 marks