Circle True or False or leave blank. (1 point for correct answer, -1 for incorrect answer, 0 if left blank)

1. True   False   If f, g, h are functions, then it is not possible to use the chain rule to find the derivative of $(f \circ g \circ h)$ because the chain rule only applies for the composition of two functions.

2. True   False   It is possible for a function to be differentiable but not continuous.

Show your work and justify your answers.

3. (10 points) Let $f(x) = x^{-1} \exp(x^{-2})$ and $g(x) = f^{-1}(x)$ be the inverse of f.

   (a) (1 point) What is the domain of f?

   (b) (1 point) Find $\lim\limits_{x \to 0^+} f(x)$.

   (c) (5 points) Find $f'(x)$.

   (d) (3 points) Given that $f(1) = e$, find $g'(e)$.