

**Question 1****(6 marks)**

Consider the derivative function  $f'(x) = xe^{x^2}$ .

- (a) Determine  $f''(1)$ . (2 marks)
- (b) Explain the meaning of your answer to part (a). (1 mark)
- (c) Determine the expression for  $y = f(x)$ , given that it intersects the  $y$ -axis at the point  $(0,2)$ . (3 marks)