

10 a) Using a mathematical expression, show that a set of non-zero functions $\{f_i(x)\}$ is mutually orthogonal within a range $a \leq x \leq b$.

(3 marks)

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b) Sketch and label the function $f'(a)$ given in a)

(2 marks)



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c) Sketch and label the Fourier transform for $a = 1$

(4 marks)



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(Total marks 20)