Question 1 (25 marks)

MAST90053 Experimental Mathematics

Due 3pm AEST on Thursday 2 July 2020

(a) Is the term

$$a_k = \binom{2k}{k} j^k$$

Gosper-summable with respect to k?

(b) Find all values of the real parameter j for which the term a_k given in part (a) is Gosper-summable. For each such value of j, express the sum

$$\sum_{k=0}^{n} a_k$$

as a hypergeometric term plus a constant.