Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Assignment 3**

Consider the disk rigidity problem on page 1-4 of the lecture notes. Simplify the structure by omitting the disk part outside the support. Use literature to find the analytical transverse displacement solution to a circular elastic plate loaded at the center point. Use the expression to deduce the coefficient  of (predicted by dimension analysis)

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where is the mass used for loading, *g* is the acceleration by gravity, *R* is the disk radius, *t* is the disk thickness, *E* is the Young’s modulus of the disk material,  its Poisson’s ratio, and *u* the transverse displacement at the center point. The latter form assumes linearity and vanishing displacement without external loading, i.e.,  when .