HW 8: Due Thurday April 9

1. Write down the potential energy for Problem SG 12.3.
2. Problem SG 12.5 (Solve using stationary potential energy.)
3. Problem SG 12.8 (Solve for the critical buckling load using an approximate stationary potential energy method.)
4. Problem SG 12.13 (Solve using an approximate stationary potential energy method.)
5. Consider a column with length $L = 1$ m and a 1×1 cm^2 square cross-section. The column has pin and pin-roller supports at $x = 0$ and $x = L$, respectively. Further, it is supported at its mid-span by a linear spring with spring constant $k = 0.5$ N/mm. The column is subjected to an axial compressive force P at the pin-roller support. Find the critical load using an approximate potential energy method.
6. Consider the system in Problem 5 except that the axial compressive load is now applied at $x = 0.75$ m instead of at $x = 1$ m. Find the critical load using an approximate potential energy method.