Module 4: Introduction to Optimization in Python
Lab Problem Set

Required Problems: 1-2
Additional optional problems: 3-5
Problems labelled with an asterisk (*) are more challenging

Problem 1

Riverside Oil Company in eastern Kentucky produces regular and supreme gasoline. Each barrel of regular sells for $21 and must have an octane rating of at least 90. Each barrel of supreme sells for $25 and must have an octane rating of at least 97. Each of these types of gasoline are manufactured by mixing different quantities of the following three inputs:

Input	Cost per Barrel	Octane Rating	Barrels Available (in 1000s)
1	$17.25	100	150
2	$15.75	87	350
3	$17.75	110	300

Riverside has orders for 300,000 barrels of regular and 450,000 barrels of supreme. How should the company allocate the available inputs to the production of regular and supreme gasoline if it wants to maximize profits?

a. Formulate an LP model for this problem.
b. Create a PuLp model for this problem and solve it.
c. What is the optimal solution?