ITEC451 - Activity 12

[Linear Programming] Extremely-Fast corp. is an internet service provider which must determine how many OC-768 communication cables need to be leased to TYPE-A clients and TYPE-B clients, respectively. (The OC-768 is a fiber optic network cable with transmission speeds of up to 39,813.12 Mbits/s.)

- One OC-768 can provide a network service to 18 TYPE-A clients and requires 9 hours of maintenance and customer services per week.
- One OC-768 cable can support 11 TYPE-B clients and requires 5 hours of maintenance and customer services.
- Each client can lease a Type-A channel at $200 per week.
- Each client can lease a Type-B channel at $300 per week.
- Seven OC-768 cables and 52 hours per week of labor for maintenance and customer services are available.
- The company regulations require that at least 30 TYPE-B clients be supported during any weeks.

Let

x_1 = number of the cables with TYPE-B clients, and
x_2 = number of cables with TYPE-A clients.

Using these decision variables, formulate LP whose solution will tell Extremely-Fast corp. how to maximize the total profit from TYPE-A and TYPE-B clients.