B.1 Solve the following linear programming problem graphically:

Maximize profit = 4X + 6Y

Subject to: X + 2Y < 8

5X + 4Y < 20

X, Y > 0

B.5 Solve the following LP problem graphically:

Minimize cost = 24X + 15Y

Subject to: 7X + 11Y > 77

16X + 4Y > 80

X, Y > 0

B.7 The Attaran Corporation manufactures two electrical products: portable air conditioners and portable heaters. The assembly process for each is similar in that both require a certain amount of wiring and drilling. Each air conditioner takes 3 hours of wiring and 2 hours of drilling. Each heater must go through 2 hours of wiring and 1 hour of drilling. During the next production period, 240 hours of wiring time are available and up to 140 hours of drilling time may be used. Each air conditioner sold yields a profit of $25. Each heater assembled may be sold for a $15 profit.

Formulate and solve this LP production-mix situation, and find the best combination of air conditioners and heaters that yields the highest profit.

B.11 The Sweet Smell Fertilizer Company markets bags of manure labeled “not less than 60 lb dry weight.” The packaged manure is a combination of compost and sewage wastes. To provide good-quality fertilizer, each bag should contain at least 30 lb of compost but no more than 40 lb of sewage. Each pound of compost costs Sweet Smell 5 cents and each pound of sewage costs 4 cents. Use a graphical LP method to determine the least-cost blend of compost and sewage in each bag.

B.21. Par, Inc., produces a standard golf bag and a deluxe golf bag on a weekly basis. Each golf bag requires time for cutting and dyeing and time for sewing and finishing, as shown in the following table:

Par, Inc., will sell whatever quantities it produces of these two products.

a) Find the mix of standard and deluxe golf bags to produce per week that maximizes weekly profit from these activities.

b) What is the value of the profit?