Exercise 74

A car rental company offers two plans for renting a car.

- Plan A: \$30 per day and \$0.18 per mile

- Plan B: \$50 per day with free unlimited mileage

How many miles would you need to drive for plan B to save you money?

Solution

The cost in Plan A is

$$C_A(x, d) = 30d + 0.18x,$$

and the cost in Plan B is

$$C_B(x, d) = 50d,$$

where x is the number of miles driven and d is the number of days the car is rented for. Find where Plan A is more expensive than Plan B.

$$C_A(x, d) > C_B(x, d)$$

$$30d + 0.18x > 50d$$

$$0.18x > 20d$$

$$x > \frac{20}{0.18}d$$

$$x > \frac{1000}{9}d \approx 111.1d$$

Therefore, if the car is driven more than about $111.1d$ miles during the time it's rented for, it's best to get Plan B.