Exercise 53

You are choosing between two different prepaid cell phone plans. The first plan charges a rate of 26 cents per minute. The second plan charges a monthly fee of \$19.95 *plus* 11 cents per minute. How many minutes would you have to use in a month in order for the second plan to be preferable?

Solution

Write a function for the cost of each plan, using x for the number of minutes and d for the number of months the plan is used for.

$$P_1(x) = 0.26x$$

$$P_2(x, d) = 0.11x + 19.95d$$

Now find where the first plan becomes more expensive than the second one.

$$P_1(x) > P_2(x, d)$$

$$0.26x > 0.11x + 19.95d$$

$$0.15x > 19.95d$$

$$x > \frac{19.95d}{0.15}$$

$$x > 133d$$

Divide both sides by d to get the number of minutes per month.

$$\frac{x}{d} > 133$$

Therefore, if you use more than 133 minutes per month on average, it's best to use the second plan.