

**EXAMPLE 5****TAKS REASONING: Multi-Step Problem**

TRIP EXPENSES Your art club is planning a bus trip to an art museum. The cost for renting a bus is \$495, and the cost will be divided equally among the people who are going on the trip. A museum ticket costs \$12.50 per person.

- Write an equation that gives the cost C (in dollars per person) of the trip as a function of the number p of people going on the trip.
- Graph the equation. *Describe* the change in the cost as the number of people increases.
- Use the graph to approximate the number of people who need to go on the trip so that the cost is about \$25 per person.

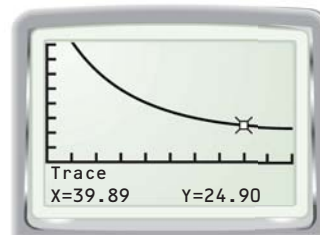
**San Francisco Art Museum****Solution**

STEP 1 Write a verbal model. Then write an equation.

Cost of trip (dollars/person)	=	Cost of bus rental (dollars)	+	Cost of ticket (dollars/person)
		Number going on trip (people)		
↓		↓		↓
C		$\frac{495}{p}$		12.50

STEP 2 Graph $C = \frac{495}{p} + 12.50$ on a graphing calculator. The vertical asymptote is $p = 0$. The horizontal asymptote is $C = 12.5$. As the number of people increases, the cost decreases.

STEP 3 **Approximate** the number of people needed in order for the cost to be about \$25. When $C \approx 25$, the value of p is about 40. So, if about 40 people go on the trip, each person will pay about \$25.

**GUIDED PRACTICE for Example 5**

7. **WHAT IF?** In Example 5, suppose the club rents a larger bus for \$610. Write and graph an equation that gives the cost C (in dollars per person) of the trip as a function of the number p of people going on the trip. Then approximate the number of people who need to go on the trip so that the cost is about \$25 per person.