Mathematics 122

Quiz 30 Name: Key

You must show your work to get full credit.

A small company starts to sell a new inexpensive bike. Their fixed cost for producing the bikes is \$5,000.00 . The marginal cost of producing q bikes is

$$C'(q) = \frac{75q + 200}{1 + 0.5q}.$$

1. What is the cost of producing 30 bikes? The cost is \$9,777.26

$5000 + \int_0^{30} C'(q)\,dq$

$= 5000 + \int_0^{30} \frac{(75q+200)}{(1+.5q)}\,dq = 9777.26$

2. If the bikes sell for \$180.00, then what is the profit (or loss) in selling 30 bikes?

$C(30) - R(q) = (180)(30) - 9777.26$ $\pi(30) =$ \$-4377.26

$= -4377.26$

3. What is the marginal cost in producing 30 bikes? $C'(30) =$ \$153.13/bike

$C'(30) = \frac{75(30)+200}{1+.5(30)} = 153.13$

4. If the company is producing 30 bikes should they (circle one) ***increase*** or ***decrease*** production? Write a sentence saying why.

Because it costs $C'(30) =$ \$153.13 to produce the 31st bike, and it sells for \$180 so there is a profit of $180 - 153.13 =$ \$26.87 on this bike.