

Mathematics 122

Quiz #12

Name: _____

Key

You must show your work to get full credit.

1. The weight in ounces, w , of a catfish is a function of its length, L , in inches. That is $w = f(L)$. Assume $f(12) = 15$ and $f'(12) = 2$.

What are the units of 12? _____

inches

What are the units of 15? _____

ounces

What are the units of 2? _____

inches/ounce

Estimate $f(12.5)$ $f(12.5) \approx$ _____

16 ounces

$$f(12.5) \approx f(12) + f'(12)(12.5 - 12) = 15 + 2(0.5) = 16$$

2. The revenue, in dollars, of producing q bottles of Zinfandel is $R(q)$ and the cost of producing these q bottles is $C(q)$. Assume

$$R(100) = 5,000 \quad C(100) = 3,000 \quad MR(100) = 40 \quad MC(100) = 45.$$

In these equations

What are the units of 100? _____

bottles

What are the units of 5,000? _____

dollars

What are the units of $MC(100) = 45$? _____

dollars/bottle

What is the profit in producing the 101-st bottle? That this just the profit in producing just this one bottle.

This is

Profit is

-5 / bottle

$$MR(100) - MC(100) = 40 - 45 = -5$$

If the winery is producing 100 bottles, should it increase or decrease its production and why.

Produce another bottle costs the winery \$5 so they should cut back on production (i.e. decrease)