(+1) Rhino Participation Bonus Name _____

Assume R is a **linear** revenue function $R = mx$, where m is the price charged per unit.
Assume the cost function, $C(x)$, has a **minimum marginal cost** at the value of $x = b$.
Recall that the **marginal cost** is another name for the first derivative, $C'(x)$.

1. Show that, no matter what kind of differentiable, continuous cost function you have,

(+0.4) a. $C(x)$ has an inflection point at $x = b$.
TIP: Assume $a < b < c$ and show that $C''(b) = 0$ and $C''(x)$ changes sign at $x = b$.

(+0.1) b. Complete: At $x = b$, $C(x)$ must change from concave _____ to concave _____.
{ up, down} { up, down}

2. Show that, no matter what kind of differentiable, continuous cost function you have,

(+0.4) a. $P(x) = R(x) - C(x)$, the profit function, has an inflection point at $x = b$.
TIP: Assume $a < b < c$ and show that $P''(b) = 0$ and $P''(x)$ changes sign at $x = b$.

(+0.1) b. Complete: At $x = b$, $P(x)$ must change from concave _____ to concave _____.
{ up, down} { up, down}