There are many possible answers. One of them is:

\[ f'(x) = 2x - 1 = 0 \text{ when } x = \frac{1}{2}. \quad f''(x) = 2 > 0, \text{ so } x = \frac{1}{2} \text{ corresponds to a local minimum.} \]

The global minimum occurs either at the critical point from part \( a \) or at the end points of the interval. The candidates are thus:

\[
\begin{array}{c|c|c}
 x & f'(x) & f''(x) \\
\hline
 0 & 0 & + \\
 2 & 2 & - \\
 \frac{1}{2} & -\frac{1}{4} & -
\end{array}
\]

The global maximum on \([0, 2]\) is thus 2, and it occurs at \( x = 2 \).

The global minimum is \(-\frac{1}{4}\), and it occurs at \( x = \frac{1}{2} \).
The fitted cost is 0.

\[ P(q) = 7q - (0.01q^3 - 0.6q^2 + 13q) \]
\[ = -0.01q^3 + 0.6q^2 - 6q. \]
\[ P'(q) = -0.03q^2 + 1.2q - 6 = 0 \text{ when} \]
\[ q = \frac{-1.2 \pm \sqrt{(-1.2)^2 - 4(-0.03)(-6)}}{2(-0.03)} = \frac{-1.2 \pm \sqrt{1.44 - 7.2}}{-0.06} \]
\[ = 20 \pm \frac{1.2}{0.06} \approx 20 \pm 14.14 \approx 34 \text{ or } 6. \]
\[ P''(q) = -0.06q + 1.2, \quad P''(6) = +84 > 0; \quad P''(34) = -84 < 0, \]
so the maximum cost should occur at around 34.
\[ P(34) = 96.56. \]

The marginal cost is:
\[ C'(q) = 0.03q^2 - 1.2q + 13. \]
The minimum marginal cost occurs where
\[ C''(q) = 0.06q - 1.2 = 0, \quad q = \frac{1.2}{0.06} = 20. \]
\[ C'(20) = (0.03)(400) - 1.2(20) + 13 = 11. \]

\[ a(q) = \frac{C(q)}{q} = \frac{0.01q^3 - 0.6q^2 + 13q}{q} = 0.01q^2 - 0.6q + 13. \]

The minimum average cost occurs where
\[ a'(q) = 0.02q - 0.6 = 0 \Rightarrow \]
\[ q = 0.6/0.02 = 30. \]
The lowest average cost is
\[ a(30) = 0.01(30^2) - 0.6(30) + 13 = 4. \]

\[ C'(30) = 0.03(30^2) - 1.2(30) + 13 = 4. \]
\[ a(30) = C'(30). \] These two quantities must be equal where the average cost is minimum.