Problem 49 in sec 6.1:

To find a linear equation you need to find two points and use the equation

\[ C'(t) - C'(t_1) = m(t - t_1) \]

The points are given as follows: In 2000 (t = 0) the rate of increase was 3.7 billion dollars/yr
And in 2007 (t = 7) the rate of increase was 3 billion dollars/yr

So we now have (0, 3.7) and (7, 3) slope \( m = \frac{3 - 3.7}{7 - 0} = -.1 \)

\[ C' = -.1(t - 7) \]

\[ C'(t) = -.1t + 3.7 \]

so \( C = \int (-.1t + 3.7)dt = -\frac{1}{2}t^2 + 3.7t + K = -.5t^2 + 3.7t + K \)

Given that Cost = 135 billion dollars in 2000 (t = 0)

\[ 135 = -.5(0) + 3.7(0) + K \quad \text{will give} \quad K = 135 \]

So \( C = -.5t^2 + 3.7t + 135 \) billion dollars