79 (a) $T(C(x)) = 6.5\ln\left(\dfrac{364(1.005)^x}{280}\right) = 6.5\ln(1.3(1.005^x)$. $T(100) = 6.5\ln\left(\dfrac{364(1.005)^{100}}{280}\right) \approx 4.95$. This model predicts an average global temperature increase of about 5°F in the year 2100.

(b) Graph $Y_1 = 364(1.005)\text{^}X$ in [0, 200, 50] by [0, 1000, 100] and $Y_2 = 6.5\ln(364(1.005)\text{^}X/280)$ in [0, 200, 50] by [0, 10, 1]. The graph of $Y_1$ is exponential and increases, while the graph of $Y_2$ is linear. See *Figures 79a & b*.

(c) $C$ is an exponential function and $T$ is a linear function over the same time period. While the carbon dioxide levels in the atmosphere increase exponentially, the average global temperature rises by a constant amount each year.

[0, 200, 50] by [0, 1000, 100]

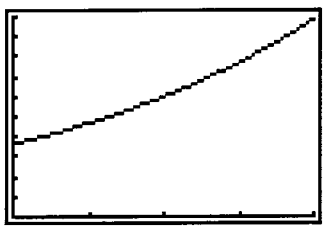

*Figure 79a*

[0, 200, 50] by [0, 10, 1]

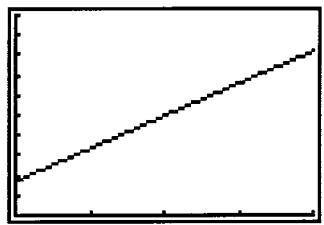

*Figure 79b*