

Each problem is worth 5 points. For full credit indicate clearly how you reached your answer.

1. The maximum sea ice extent in the Northern hemisphere was measured at 12.8 million square kilometers in 1990 and 12.1 million square kilometers in 2002. Find a linear function which includes these two points.

x	y
1990,	12.8 million y_2
2002,	12.1 mil y_1

$$m = \frac{12.8 - 12.1}{1990 - 2002} = \frac{.7}{-12} \text{ Yes.}$$

$$y - y_0 = -\frac{.7}{12} (x - x_0)$$

$$y - 12.8 = -\frac{.7}{12} (x - 1990)$$

$$y - 12.8 = \left(-\frac{.7}{12}x + 116.08\right)$$

$$y = -\frac{.7}{12}x + 128.88$$

Smart. $y = -\frac{.7}{12}(2002) + 128.88$

$$= 12.09 \text{ m}$$

$$y = -\frac{.7}{12}x + 128.88$$

2. The population of the U.S. in the 1980 census was 227 million, and in 1990 was 249 million. Find an exponential function which represents the population t years after 1980, assuming the current rate of growth.

$$P = P_0 a^t \quad P_0 = 227$$

$$249 = 227 \cdot a^{10} \quad t = 10$$

$$a \approx 1.0093 \quad P = 249$$

$$P = 227 (1.0093)^t$$

Well Done