**Countering Global Warming**

Use the equations we developed in Activity 7.6.1 to answer the following questions. Show all of your work!

1. Predict the CO2 level in the year 2025.
2. Predict the temperature of the Earth in the year 2025.

**Green Energy**

Individuals and governments have begun responding to global warming by investing in “green” energy sources. One green energy source is wind power. Below is a table of global wind power, in megawatts, from 1980-2009.

|  |  |  |
| --- | --- | --- |
| **Year** | **Years since 1980** | **World Wind Power****(Megawatts)** |
| 1980 |  | 10 |
| 1982 |  | 90 |
| 1984 |  | 600 |
| 1986 |  | 1,270 |
| 1988 |  | 1,580 |
| 1990 |  | 1,930 |
| 1992 |  | 2,510 |
| 1994 |  | 3,490 |
| 1996 |  | 6,100 |
| 1998 |  | 10,200 |
| 2000 |  | 17,400 |
| 2002 |  | 31,100 |
| 2004 |  | 47,620 |
| 2006 |  | 74,052 |
| 2008 |  | 120,550 |
| 2009 |  | 157,899 |

|  |  |
| --- | --- |
| 1. What kind of model should you create for these data? Explain.
2. Write a function to model the data. Use years since 1980 for the *x* variable.
3. Explain the meaning of the "*a*" and "*b*" parameters in your equation.
4. According to you equation, by what percent is the world's wind power increasing each year?
5. Use your equation to predict the megawatts of wind power in 2025.

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**Solar Power**

The development of solar power may also help us combat global warming. The graph below shows the increase in solar power production in the years 1980-2009. Source: <http://www.earth-policy.org/datacenter/pdf/book_wote_energy_solar.pdf>

**World Annual Solar Photovoltaics Production, 1975 – 2009**



1. What kind of model do you think will best fit these data? Explain.

1. Write a function to model the data.
2. According to your equation, by what percent is the world's solar power production increasing each year?

|  |
| --- |
| 1. Use your function to predict the megawatts of solar power in 2025.
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**Geothermal Electricity**

Geothermal electricity is another power source that may help us counter global warming. The function modeling global geothermal electricity-generating capacity in megawatts, from 1980-2010, is:

where *x* is the number of years since 1980.

1. From 1980 to 2010, by what percent is geothermal electricity-generating capacity increasing each year?
2. Use the equation given to fill out the table below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 |
| **Number of years since 1980** |  |  |  |  |  |  |  |
| **Geothermal power** |  |  |  |  |  |  |  |

14. Graph the equation. Include title and labels and carefully scale axes.

