Graphing Practice Exercise

Using Manual Entry and **Vernier's *Graphical Analysis* 4**, plot these following sets of data and analyze their graphs using regression analysis (e.g., give the best fit equation or answer specific questions). Be certain to label axes with variables and units. In all cases, whiteboard your results.

Graph 1:

Internet Users in the United States by Year

Year	Number (millions)
2000	124.0
2001	142.8
2002	167.2
2003	172.3
2004	201.7
2005	203.9
2006	207.2

Graph 2:

N1	N2
0.1	10.0
0.5	2.00
0.9	1.11
1.2	0.83
1.5	0.67
1.8	0.56

Graph 3:

Distance from Source vs. Force

m	N
.33	9.18
.67	2.23
1.0	1.00
3.0	0.11
5.0	0.04
7.0	0.02

Graph 4:

The work done on/by a spring equals area under an F vs. Δx graph. If a spring constant $k = 3.22N/cm$, how much work is done on the spring moving it from $x = 3.56cm$ to $x_f = 5.45cm$?

Hint: Make a graph of, say, F vs. Δx for $\Delta x = 0cm$ to $\Delta x = 8cm$. (Recall, $F = -k\Delta x$.) Then, integrate the area under the line from $\Delta x_i = 3.56cm$ to $\Delta x_f = 5.45cm$. Be certain to include units.

Graph 5:

The horizontal speed of a point on a CD is given by this relationship:

$$V = 31.5cm/s * sin\theta$$

where θ is the angular distance from a start point on the horizontal X axis of an X-Y graph. Plot a graph of V vs. θ at $10°$ degree intervals from $0°$ to $90°$. Then, using the graph, determine the value of V at $\theta = 34.5°$.

Hint: Plot your data and then use the interpolate tool…

Graph 6:

Given the relationship, $d = 7.3\frac{m}{s^2}t^2 - 3.4\frac{m}{s}t + 5.6m$, make a plot of d vs. t for the first 10 seconds of the motion. Then, using the graph, find the velocity at $t = 2.2s$.

Hint: Plot your data, perform a curve fit, and then use the tangent tool to show the velocity (slope) at the indicated time.