

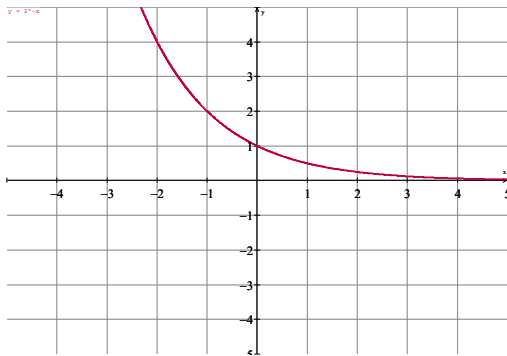
Graphs of Functions

For each of the following functions:

- Draw a sketch of the each graph without using the graphing calculator. Check your answer by using the graphing calculator.
- Create a set of table values for each function in the neighborhood of 1:
 $0.8 \leq x \leq 1.3$.
- Describe whether the function is increasing, decreasing, or not changing when $x = 1$.
- If the function is increasing or decreasing at $x = 1$, use the graph and/or table values to decide if the function is increasing or decreasing at a rate that is slow or fast.

Get students to decide If abs. Value or slope is less than 1, graph is changing slowly.

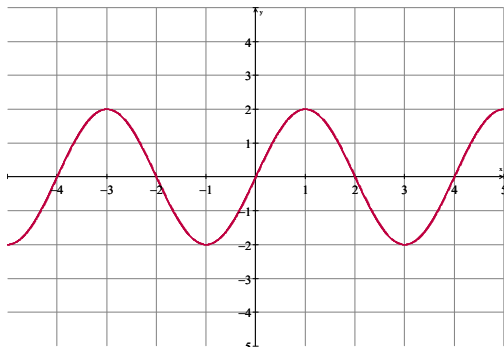
1. $y = 2^{-x}$



x	y
0.8	.574
0.9	.535
1.0	.500
1.1	.466
1.2	.435
1.3	.406

Decreasing slowly

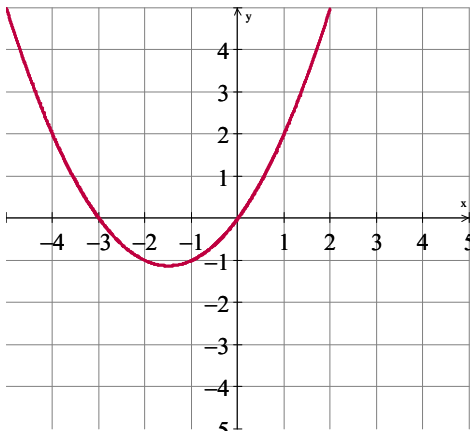
2. $y = 2 \sin\left(\frac{\pi}{2}x\right)$



x	y
0.8	1.90
0.9	1.97
1.0	2.00
1.1	1.97
1.2	1.90
1.3	1.78

Not increasing or decreasing

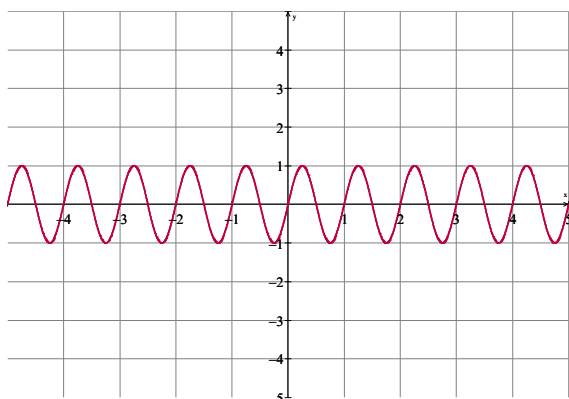
3. $y = \frac{1}{2}x^2 + 1\frac{1}{2}x$



Increasing quickly

x	y
0.8	1.52
0.9	1.75
1.0	2.00
1.1	2.26
1.2	2.52
1.3	2.80

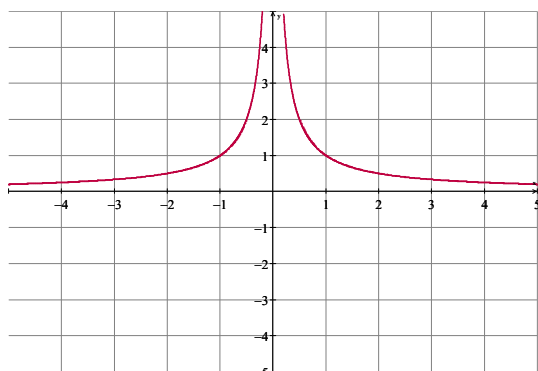
4. $y = \sin(2\pi x)$



Increasing quickly

x	y
0.8	-0.95
0.9	-0.59
1.0	0.00
1.1	0.59
1.2	0.95
1.3	0.95

5. $y = \left| \frac{1}{x} \right|$



Decreasing, but not fast or slow

x	y
0.8	1.25
0.9	1.11
1.0	1.0
1.1	0.91
1.2	0.83
1.3	0.76