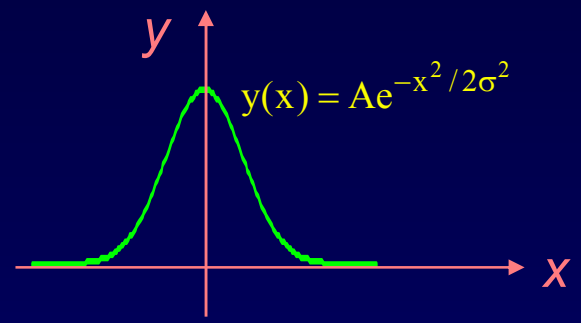
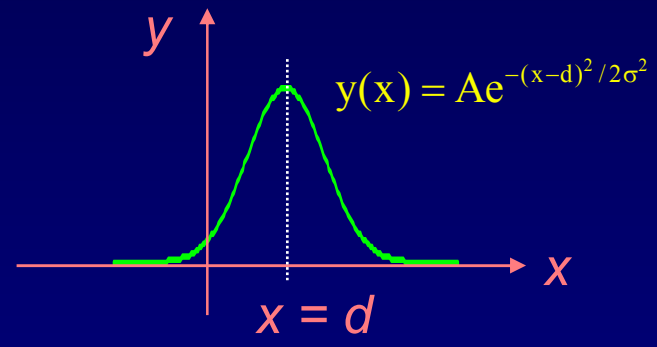
Appendix: Traveling Wave Math

Why is $f(x \pm vt)$ a "travelling wave"?
Suppose we have some function $y = f(x)$:



$y = f(x - d)$ is just the same shape shifted a distance d to the right:



Suppose $d = vt$. Then:

- $f(x - vt)$ will describe the same shape moving to the right with speed v.
- $f(x + vt)$ will describe the same shape moving to the left with speed v.