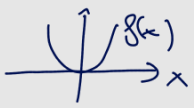
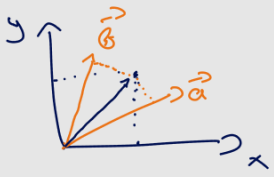
$f(x) \equiv x^2$ 

$= x^2 + 0\cdot x + 0$

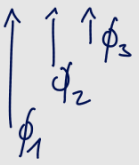
$\phi_1 = 1 \qquad \phi_2 = x$

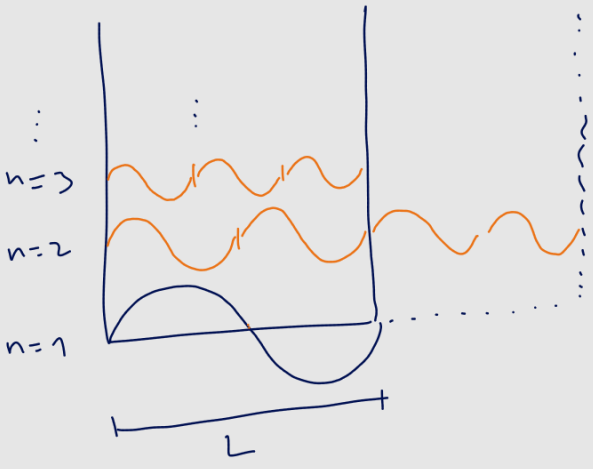


$f(x) \equiv x(x+1) = x^2 + x = 1\cdot\phi_3 + 1\cdot\phi_2$

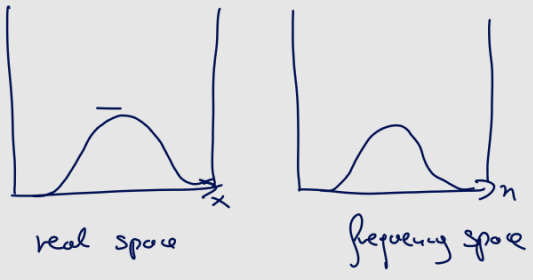
$f(x)$: $\overbrace{(0,1,1)}^{c_i}$

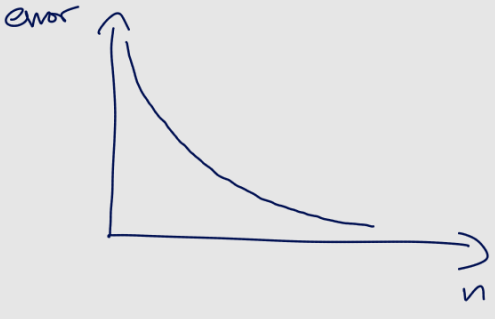
$\phi_1 = 1 \qquad \phi_2 = x \qquad \phi_3 = x^2 \qquad (\phi_i = x^{(i-1)})$

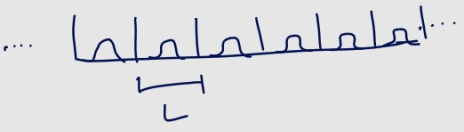


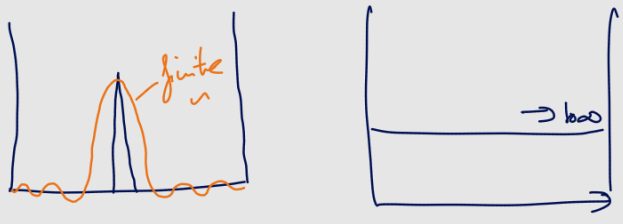


$\sin\left(2\pi \frac{x}{L} n\right)$

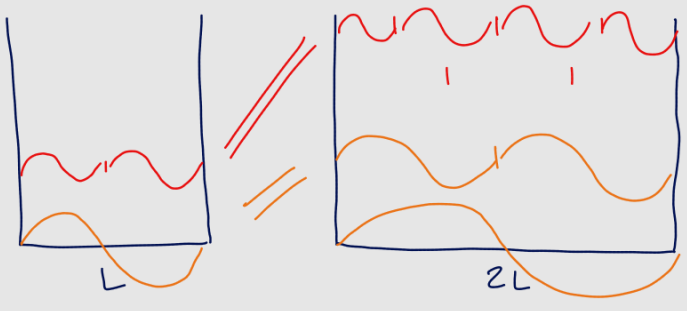


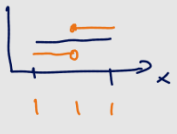


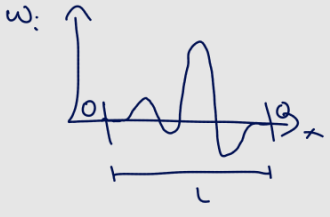


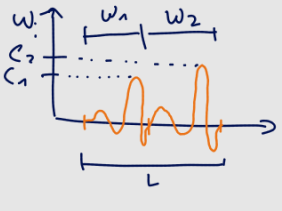


$\int dx\, \delta(x_0 - x) f(x) = f(x_0)$ $\qquad$ δ-space

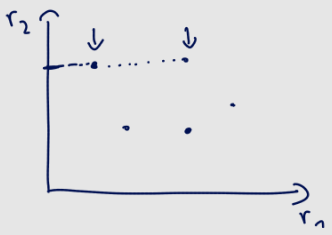


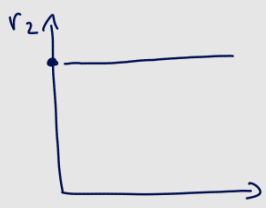






$g(\vec{r}_1, \vec{r}_2)$ vs. $\tilde{g}(\rho_1(\vec{r}), \rho_2(\vec{r}))$





Interaction

e^- w/ e^-

e^- w/ ρ

$\tilde{g} = \tilde{g}(\rho_1(\vec{r}), \rho_2(\vec{r}))$

$= \int\int d\vec{r}_1\, d\vec{r}_1\; g(\vec{r}_1, \vec{r}_2)\, \rho_1(\vec{r}_1)\, \rho_2(\vec{r}_2)$

$Z, R \Leftrightarrow V_{ext}$

$\hat{H} K_1$

ρ

$F[Z, R, \rho, V_{ext}] = F[\rho]$