2014-12-17

7) $e^{-t^2/4} = e^{-(\frac{t}{\sqrt{2}})^2/2} \xrightarrow{\mathcal{F}} \sqrt{2\pi}\,\sqrt{2}\,e^{-(\sqrt{2}\xi)^2/2} =$

$= 2\sqrt{\pi}\,e^{-\xi^2}$

$$\hat{f}(\xi)\sqrt{2\pi}\,e^{-\xi^2/2} = 2\sqrt{\pi}\,e^{-\xi^2}$$

$$\Rightarrow \hat{f}(\xi) = \sqrt{2}\,e^{-\xi^2/2} = \frac{1}{\sqrt{\pi}}\sqrt{2\pi}\,e^{-\xi^2/2}$$

$$\Rightarrow f(t) = \frac{1}{\sqrt{\pi}}\,e^{-t^2/2}$$