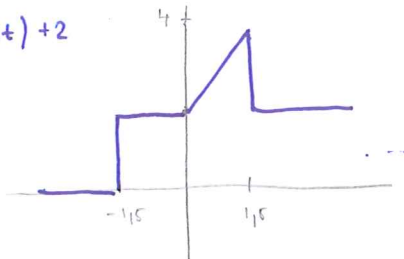
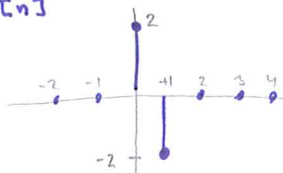


① $2x(2t) + 2$



② $x[-n]u[n]$



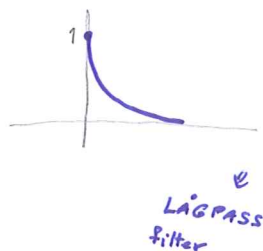
③ $\{y[n]\}_n^{\infty} = (3,33 - 2,33 \cdot 0,7^n)u[n]$

④ $f_s > 2 \cdot 2000 > 4000 \text{ Hz}$

⑤ $X(\omega) = \frac{1 - e^{-j\omega}}{j\omega}$

⑥ $H(s) = \frac{1000}{1000 + 5,6s}$

$|H(\omega)| = \frac{1000}{|1000 + 5,6j\omega|}$



$H(0) = 1$
 $H(\infty) = 0$

⑦ $A \leftrightarrow 3$

$B \leftrightarrow 4$

$C \leftrightarrow 1$

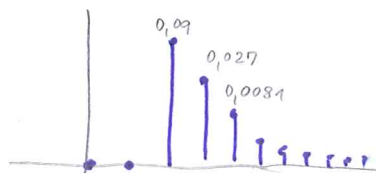
$D \leftrightarrow 2$

⑧ $f(t) = 1 + \sum_{k=-\infty}^{\infty} \frac{-j}{k\pi} e^{jk\omega_0 t}$

$f(t) = 1 + \sum_{k=1}^{\infty} \frac{2}{k\pi} \sin(k\pi t)$

⑨ $F(s) = \frac{4(s+2)}{s^2 + 4s + 13}$

⑩ $X(z) = \frac{0,09}{z^2 - 0,7z}$



(11)

$$H(z) = \frac{Y(z)}{X(z)} = \frac{b_0 z^3 + b_1 z^2}{z^3 + a_1 z^2 + a_2 z + a_3}$$

$$(12) a) i(t) = 30 - 32 e^{-0,5t} + 2 e^{-2t}$$

$$b) \quad \Re > \frac{1}{2}$$

$$(13) \quad \alpha = 18^\circ$$

$$H(1) = k \cdot 0,99978 \Rightarrow k = \frac{1}{0,99978} \approx 1,00022$$

$$H(z) = k \cdot \frac{z^2 - 2z \cos 18^\circ + 1}{z^2 - 1,8z \cos 18^\circ + 0,81}$$

(14)

$$y(t) = 0,5 e^{-t} + 0,5 e^{-5t}$$