# Homework 5: due 02/23/18 

EE 324: Signals and Systems II

## 1 Laplace transform

1. $x(t)=(t-1)^{2} \cos \left(\frac{\pi}{3}(t-1)\right) u(t-1)$
2. $x(t)=(t-1)^{2} \cos \left(\frac{\pi}{3}(t-1)\right) u(t)$

## 2 Zeros, poles and stabilities

Calculate the zeros and poles of the following transfer functions and determine their stabilities

1. $H(s)=\frac{s+1}{s^{2}+5 s+4}$
2. $H(s)=\frac{s^{2}+6 s+9}{s^{2}+2 s+5}$
3. $H(s)=\frac{s^{2}-s+12}{s^{3}+2 s^{2}-s+2}$

## 3 Inverse Laplace transform

1. $\frac{s+2}{s^{2}+2 s+1}$
2. $\frac{s^{2}+1}{s^{3}+3 s^{2}+3 s+1}$
3. $\frac{s^{2}-1}{s^{2}+2 s+1}$
4. $\frac{s^{2}+7 s+7}{s^{3}+5 s^{2}+7 s+3}$
5. $\frac{2 s^{2}+5 s+7}{s^{3}+4 s^{2}+9 s+10}$
