**Sheet 3**

1. Consider a discrete-time signal, fed as input into a system. The system produces the discrete-time output such that:



1. Is the system described above memoryless? Explain.
2. Is the system described above causal? Explain.
3. Are causal systems in general memoryless? Explain.
4. Is the system described above linear and time-invariant? Explain
5. State with a brief explanation if the following systems are linear/non-linear, causal/non-causal, timeinvariant/time-varying.



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1. Show that the system described by the equation $y\_{\left(t\right)}=x\_{(t)}^{2}$ is not invertible but BIBO stable.
2. Is these systems are invertible or no?
3. *y*(*t*) = *x*(*t*+2)
4. *y*(*t*) = (cos(t)+2) *x*(*t*)

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