

Solution of EECS 315 Test 6 F13

For each system description below with excitation x and response y circle the correct properties.

1. $y''(t) + 2y'(t) + 7y(t) = x(t)$
- | | | | |
|----------------|--------------|--------|----------|
| Linear | Non-Linear | Stable | Unstable |
| Time Invariant | Time Variant | Static | Dynamic |

Linear, Stable, Time-Invariant, Dynamic

2. $y[n] + 1.2y[n-1] + 2.3y[n-2] = x[n]$
- | | | | |
|----------------|--------------|--------|----------|
| Linear | Non-Linear | Stable | Unstable |
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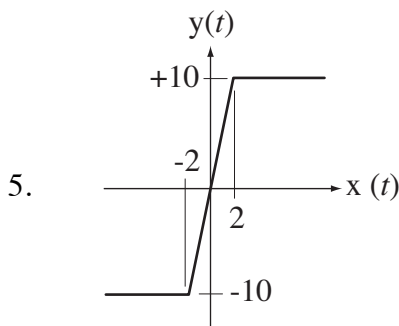
Linear, Unstable, Time-Invariant, Dynamic

3. $y(t) = \int_{-\infty}^{t+2} x(\lambda) d\lambda$
- | | | | |
|----------------|--------------|--------|------------|
| Linear | Non-Linear | Stable | Unstable |
| Time Invariant | Time Variant | Causal | Non-Causal |

Linear, Unstable, Time-Invariant, Non-Causal

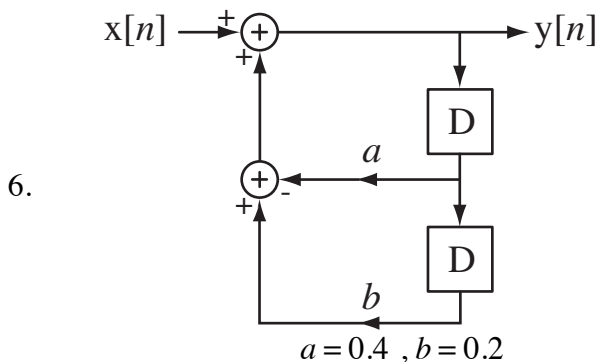
4. $y[n] = \sum_{m=-\infty}^{n-1} x[m]$
- | | | | |
|----------------|--------------|--------|------------|
| Linear | Non-Linear | Stable | Unstable |
| Time Invariant | Time Variant | Causal | Non-Causal |

Linear, Unstable, Time-Invariant, Causal



- | | | | |
|------------|----------------|--------|----------|
| Linear | Non-Linear | Stable | Unstable |
| Invertible | Non-Invertible | Static | Dynamic |

Non-Linear, Stable, Non-Invertible, Static



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|----------------|--------------|--------|----------|
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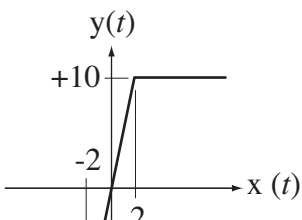
Linear, Stable, Time-Invariant, Dynamic

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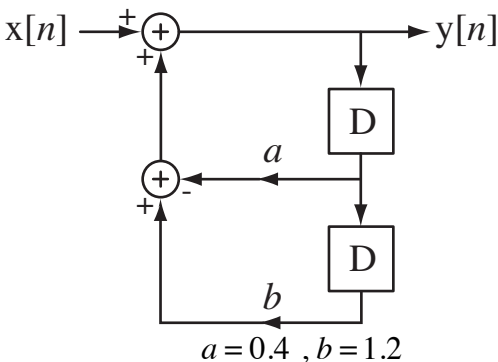
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2. 
- | | | | |
|------------|----------------|--------|----------|
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Non-Linear, Stable, Non-Invertible, Static

3. 
- | | | | |
|----------------|--------------|--------|----------|
| Linear | Non-Linear | Stable | Unstable |
| Time Invariant | Time Variant | Static | Dynamic |
- $a = 0.4, b = 1.2$

Linear, Unstable, Time-Invariant, Dynamic

4. $y''(t) + 2y'(t) + 7y(t) = x(t)$
- | | | | |
|----------------|--------------|--------|----------|
| Linear | Non-Linear | Stable | Unstable |
| Time Invariant | Time Variant | Static | Dynamic |

Linear, Stable, Time-Invariant, Dynamic

5. $y[n] - 1.2y[n-1] + 0.3y[n-2] = x[n]$
- | | | | |
|----------------|--------------|--------|----------|
| Linear | Non-Linear | Stable | Unstable |
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Linear, Stable, Time-Invariant, Dynamic

6. $y(t) = \int_{-\infty}^{t-2} x(\lambda) d\lambda$
- | | | | |
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Linear, Unstable, Time-Invariant, Causal