VIB : 1DOF

Number of participants: 50

1. When describing a harmonic motion, the complex amplitude vector contains

17 correct answers out of 23 respondents

	the phase information only	4%	1 vote
	the amplitude and the frequency information	17%	4 votes
✔	both the phase and amplitude information	74%	17 votes
	the frequency information only	4%	1 vote

2. The natural frequency of a mass-spring system depends on

21 correct answers out of 27 respondents

✔	the mass of the system	89%	24 votes

✔	the stiffness of the system	89%	24 votes
	the force with which we excite the system	4%	1 vote
	the location of the force applied to the system	4%	1 vote

3. The natural frequency of a mass-spring system increases when

21 correct answers out of 27 respondents

	the mass increases	11%	3 votes
✔	the stiffness increases	85%	23 votes
✔	the mass decreases	89%	24 votes
	the stiffness decreases	11%	3 votes

4. When an undamped 1DOF system is moved from the equilibrium position and then released, it oscillates freely at a frequency

19 correct answers out of 21 respondents

	Lower than its natural frequency	0%	0 votes

✔	Equal to its natural frequency	90%	19 votes
	Higher than its natural frequency	10%	2 votes

5. When excited with a harmonic force at a frequency below the natural frequency of an undamped 1DOF system, the motion of the mass is

18 correct answers out of 21 respondents

	180° out-of-phase with the excitation	0%	0 votes
	90° out-of-phase with the excitation	10%	2 votes
	30° out-of-phase with the excitation	5%	1 vote
✔	in-phase with the excitation	86%	18 votes

6. When excited with a harmonic force at a frequency above the natural frequency of an undamped 1DOF system, the motion of the mass is

19 correct answers out of 23 respondents

✔	180° out-of-phase with the excitation	83%	19 votes
	90° out-of-phase with the excitation	4%	1 vote
	60° out-of-phase with the excitation	0%	0 votes
	random	13%	3 votes

7. For an undamped 1DOF system, when excited with a harmonic force at a frequency corresponding to its natural frequency, the amplitude of the motion is

25 correct answers
out of 25 respondents

	in phase with the excitation force	0%	0 votes
	180° out-of-phase with the excitation force	0%	0 votes
✔	infinite	100%	25 votes

8. It is possible to break a wine glass with your voice by

24 correct answers
out of 25 respondents

	exciting it at very high frequency	4%	1 vote
	exciting it at low frequency	0%	0 votes

21 respondents

9. Have you watched the videos before coming to class?

✔	exciting it at one of its natural frequencies	96%	24 votes
	Yes	81%	17 votes
	No	19%	4 votes

10. When damping increases in a 1DOF system, the amplitude of vibration when excited near its natural frequency

19 correct answers
out of 22 respondents

	increases	9%	2 votes
✔	decreases	86%	19 votes
	remains constant	5%	1 vote

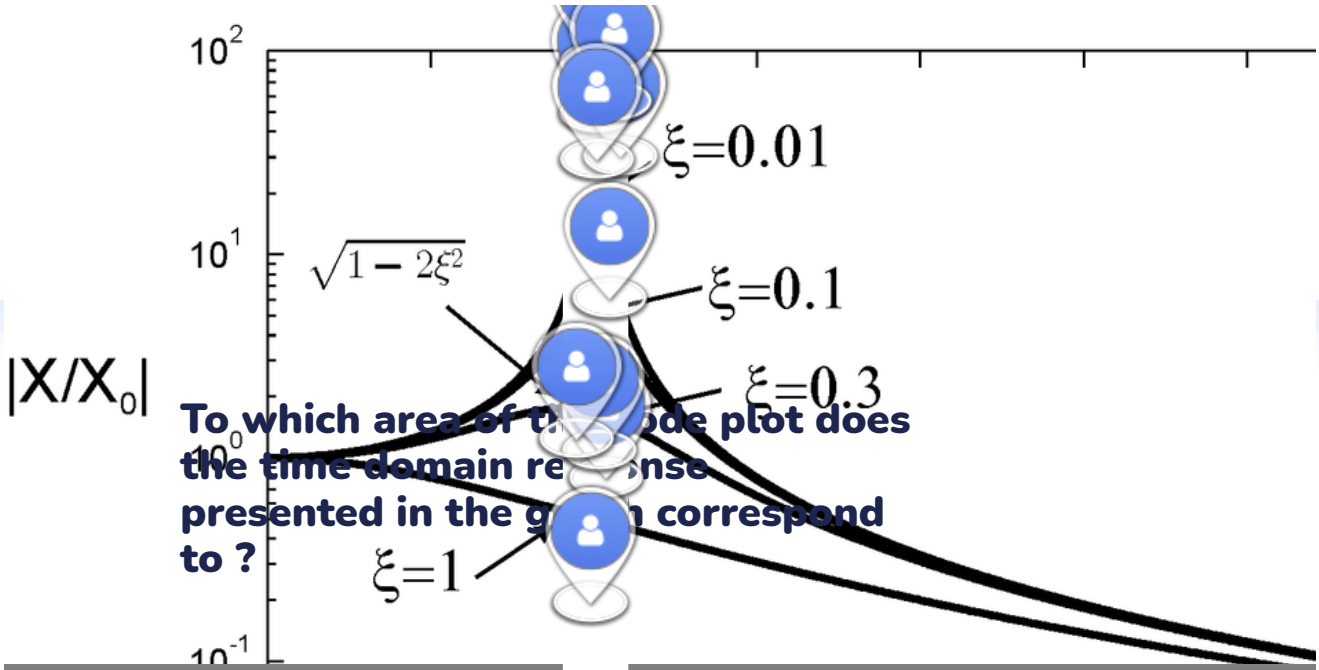
11. When damping increases in a 1DOF system, the amplitude of vibration when excited far from its natural frequency

13 correct answers
out of 21 respondents

	decreases	19%	4 votes
	increases	19%	4 votes
✔	remains constant	62%	13 votes

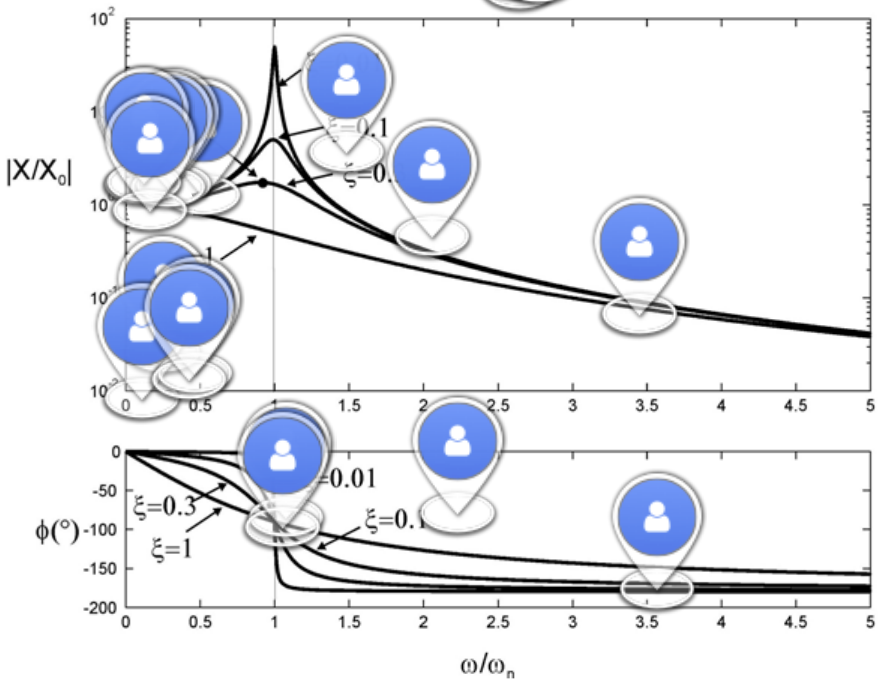
12. Where is the resonant frequency of the 1DOF system on this diagram ?

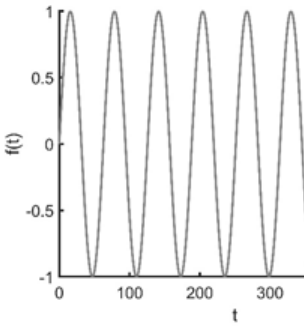
24 respondents



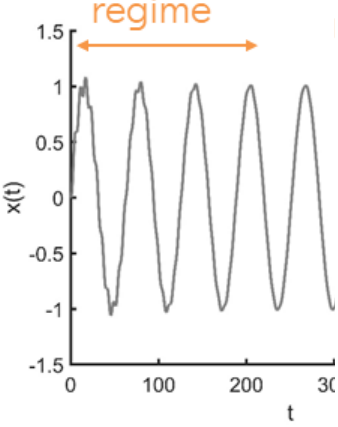
To which area of the Bode plot does the time domain response presented in the graph correspond to ?

Bode plot vs time domain response



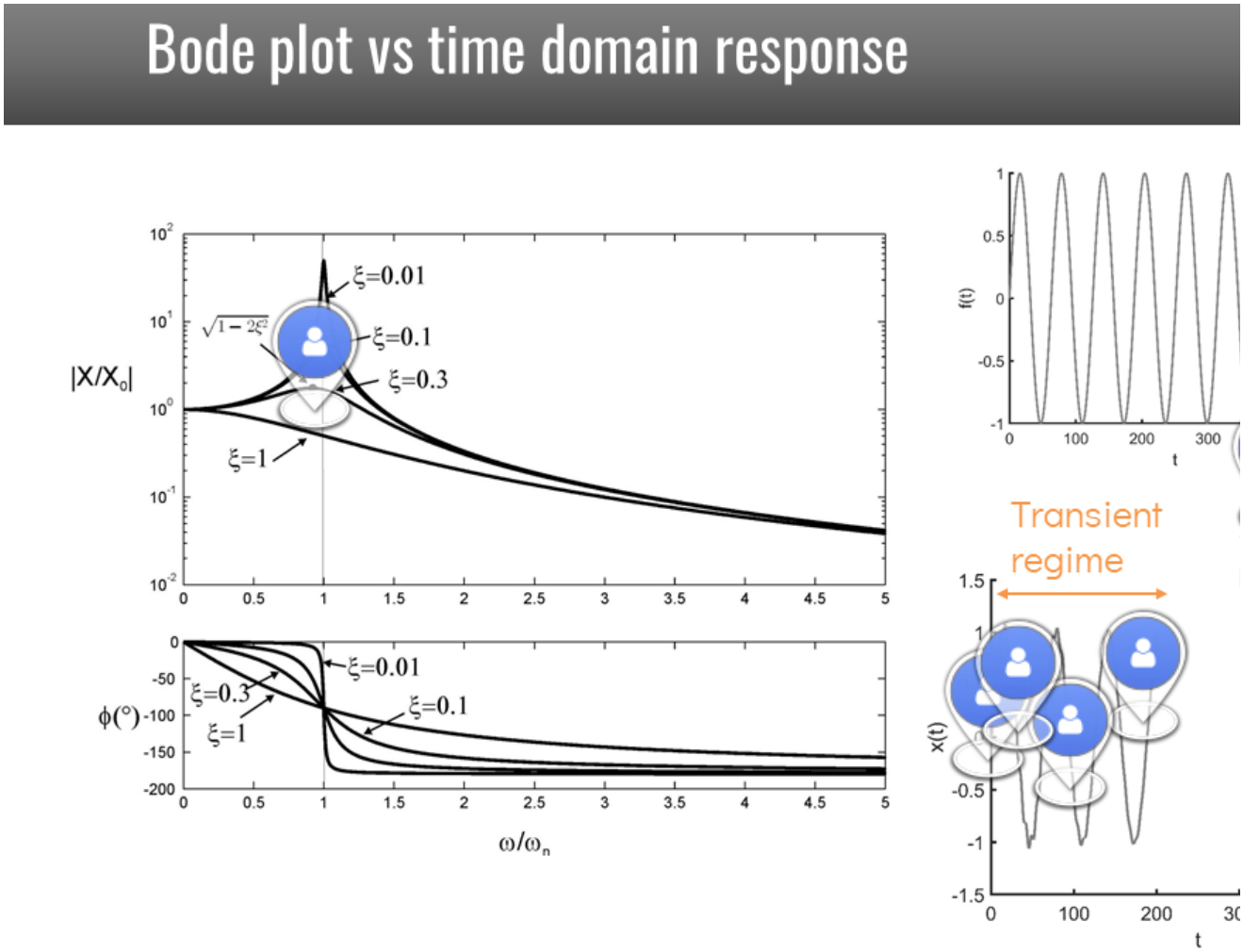


Transient regime



14. Which part of the time domain response actually corresponds to the hypothesis in the Bode plot ?

16 respondents

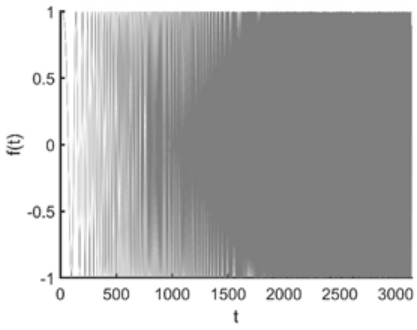


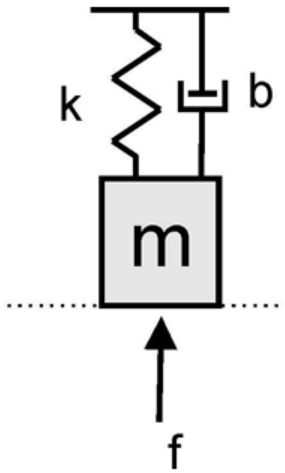
15. For a sine sweep excitation, which area of the time domain response represents resonance ?

16 respondents

Sine sweep excitation

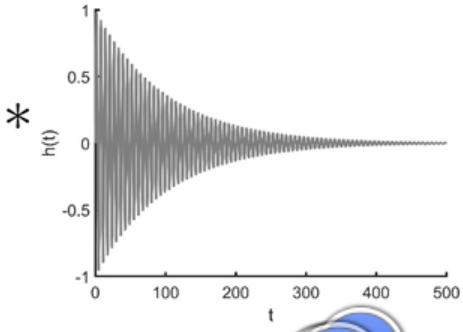
$f(t) = \sin(\omega t)$





=

h(t)



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