DOS : 1DOF

Number of participants: 20

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

10 correct answers
out of 15 respondents

	the phase information only	7%	1 vote
	the amplitude and the frequency information	27%	4 votes
✓	both the phase and amplitude information	67%	10 votes
	the frequency information only	0%	0 votes

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

10 correct answers
out of 15 respondents

✓	the mass of the system	67%	10 votes
✓	the stiffness of the system	93%	14 votes
	the force with which we excite the system	13%	2 votes
	the location of the force applied to the system	0%	0 votes

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

14 correct answers
out of 15 respondents

	the mass increases	0%	0 votes
✓	the stiffness increases	93%	14 votes
✓	the mass decreases	100%	15 votes
	the stiffness decreases	0%	0 votes

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

8 correct answers
out of 16 respondents

	Lower than its natural frequency	38%	6 votes
✓	Equal to its natural frequency	50%	8 votes
	Higher than its natural frequency	13%	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

8 correct answers
out of 15 respondents

	180° out-of-phase with the excitation	20%	3 votes
	90° out-of-phase with the excitation	20%	3 votes
	30° out-of-phase with the excitation	7%	1 vote
✓	in-phase with the excitation	53%	8 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

14 correct answers
out of 14 respondents

✓	180° out-of-phase with the excitation	100%	14 votes
	90° out-of-phase with the excitation	0%	0 votes
	60° out-of-phase with the excitation	0%	0 votes
	random	0%	0 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

11 correct answers
out of 13 respondents

	in phase with the excitation force	15%	2 votes
	180° out-of-phase with the excitation force	0%	0 votes
✓	infinite	85%	11 votes

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

16 correct answers
out of 16 respondents

	exciting it at very high frequency	0%	0 votes
	exciting it at low frequency	0%	0 votes
✓	exciting it at one of its natural frequencies	100%	16 votes

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

15 correct answers
out of 16 respondents

	increases	6%	1 vote
✓	decreases	94%	15 votes
	remains constant	0%	0 votes

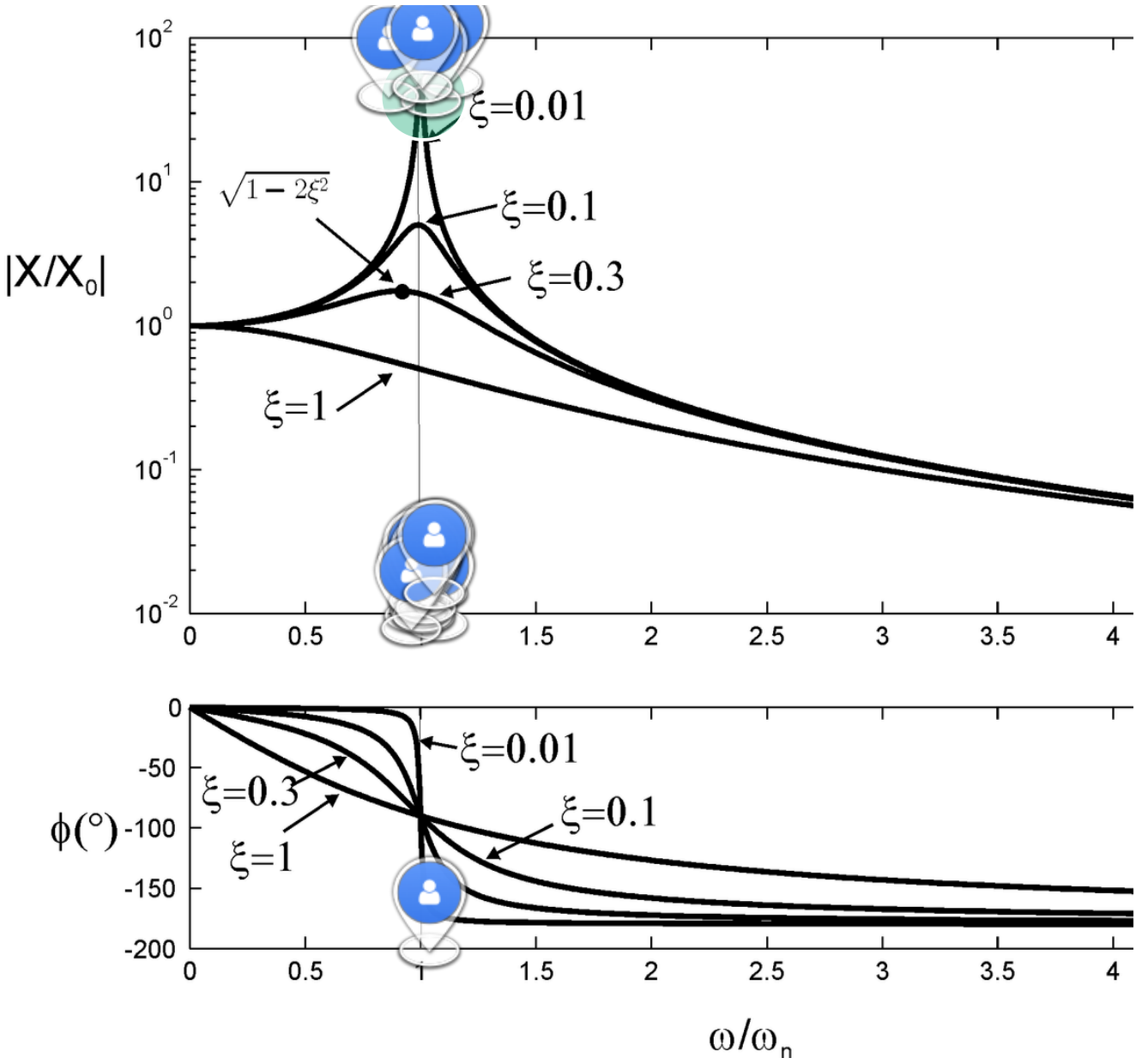
10. When damping increases in a 1DOF system, the amplitude of vibration when excited far from its natural frequency

8 correct answers
out of 14 respondents

	decreases	29%	4 votes
	increases	14%	2 votes
✓	remains constant	57%	8 votes

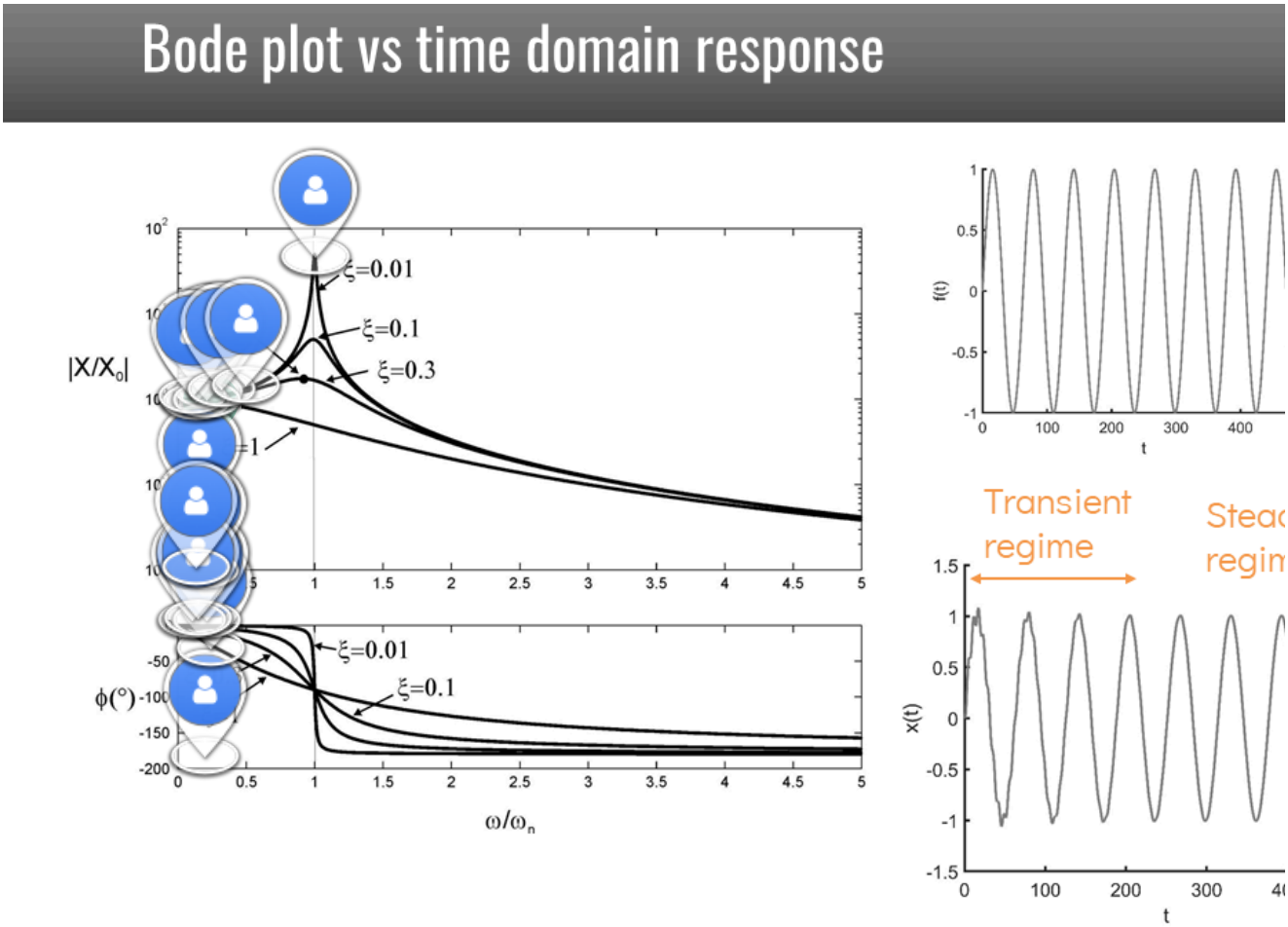
11. Where is the resonant frequency of the 1DOF system on this diagram ?

16 respondents



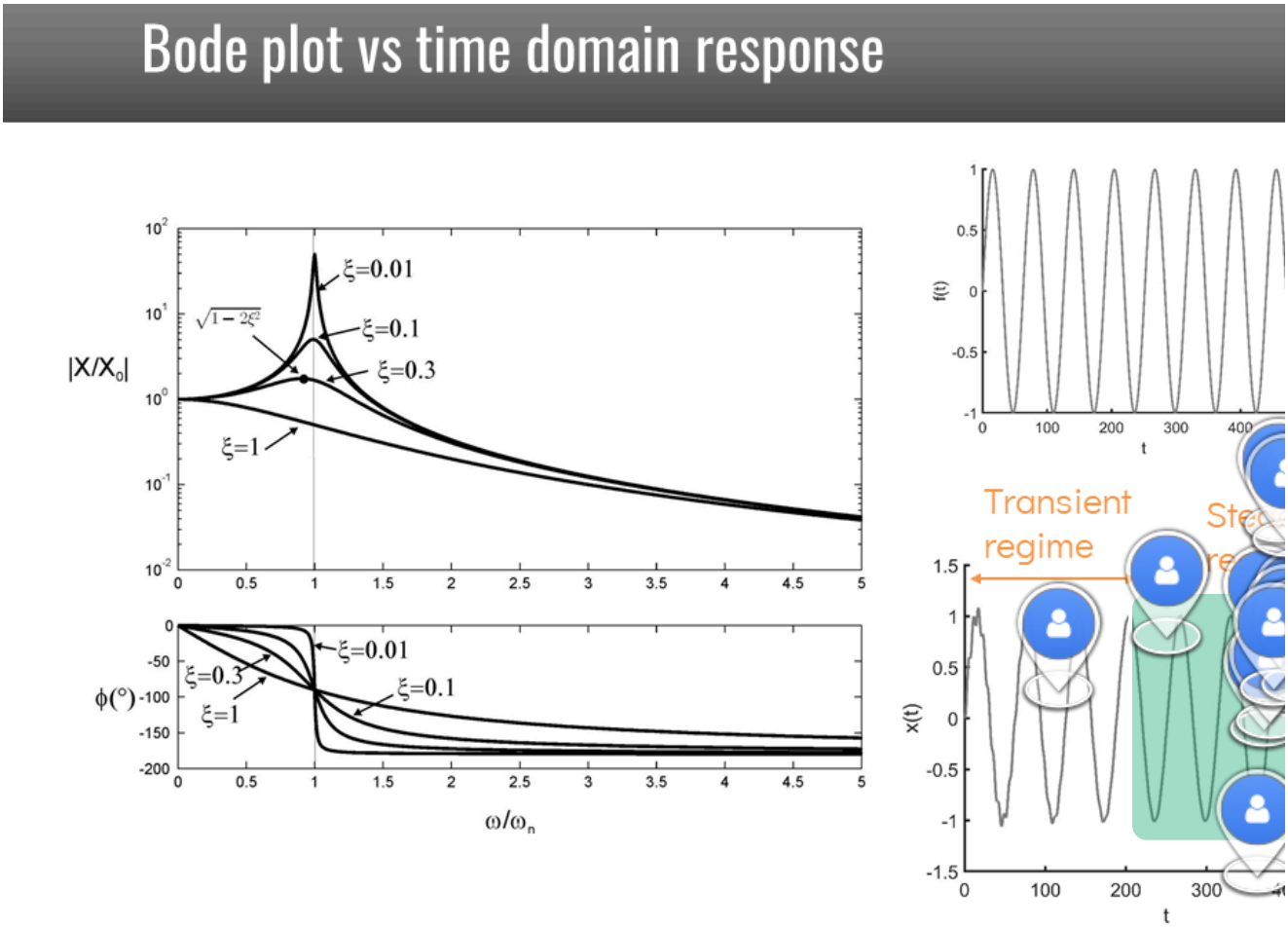
12. To which area of the bode plot does the time domain response presented in the graph correspond to ?

15 respondents



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

14 respondents



14. For a sine sweep excitation, which part of the time domain response corresponds to the resonance of the 1DOF system ?

15 respondents