Damping and Phase Lag

Quiz: Consider the equation

$$\ddot{x} + b\dot{x} + 2x = \cos(t).$$

If the damping constant b starts at 1 and is increased, what happens to the phase lag?

Choices:

a) It increases.

b) It decreases.

c) It stays the same.

Answer: The phase lag increases:
The phase lag is the argument of $p(i) = 1 + bi$. As b increases the argument increases.

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