Answer on Question #81707, Physics / Other

Question:

In a damp oscillator m=250g spring constant k=85N/m. B=0.070kg.

Time taken for amplitude to reduce by 50%

Solution:

The amplitude changes in accordance with the formula: $A = A_0 \exp(-\frac{Bt}{2m})$, what means that

$\frac{BT}{2m} = \ln(\frac{A_0}{A}) = \ln 2 = 0.69$, therefore $T = \frac{2 \cdot 0.69 \cdot m}{B} = \frac{1.38 \cdot 0.25}{0.07} = 4.9$ (s).

The answer:

Time taken for amplitude to reduce by 50% equals to 4.9 s.