4. [7 points] You have an object attached to the end of a spring and you are trying to study its motion. Using Newton's second law and Hooke's law your physics teacher determines the displacement x from equilibrium of the object is a solution to the differential equation

$$\frac{d^2x}{dt^2} + 2x = 0.$$

For what values of A, B, and ω is

$$x(t) = A\cos(\omega t) + B\sin(\omega t)$$

a solution to the equation above satisfying the initial conditions $x(0) = 1$ and $x'(0) = 2$? Write your answers in the blanks provided and be sure to show all work.

$A =$_____

$B =$_____

$\omega =$_____