One dimensional homogeneous Helmholtz equation:

|  |  |  |
| --- | --- | --- |
|  | . | (1) |

By considering a solution of the form

|  |  |  |
| --- | --- | --- |
|  | , | (2) |

where is the amplitude and is the travel-time one obtains the following two coupled equations

|  |  |  |
| --- | --- | --- |
|  | . | (3) |
|  | , | (4) |

Now

So equation (1) reads

|  |  |  |
| --- | --- | --- |
|  | . | (5) |

=>

|  |  |  |
| --- | --- | --- |
|  | . | (6) |

|  |  |  |
| --- | --- | --- |
|  | . | (7) |