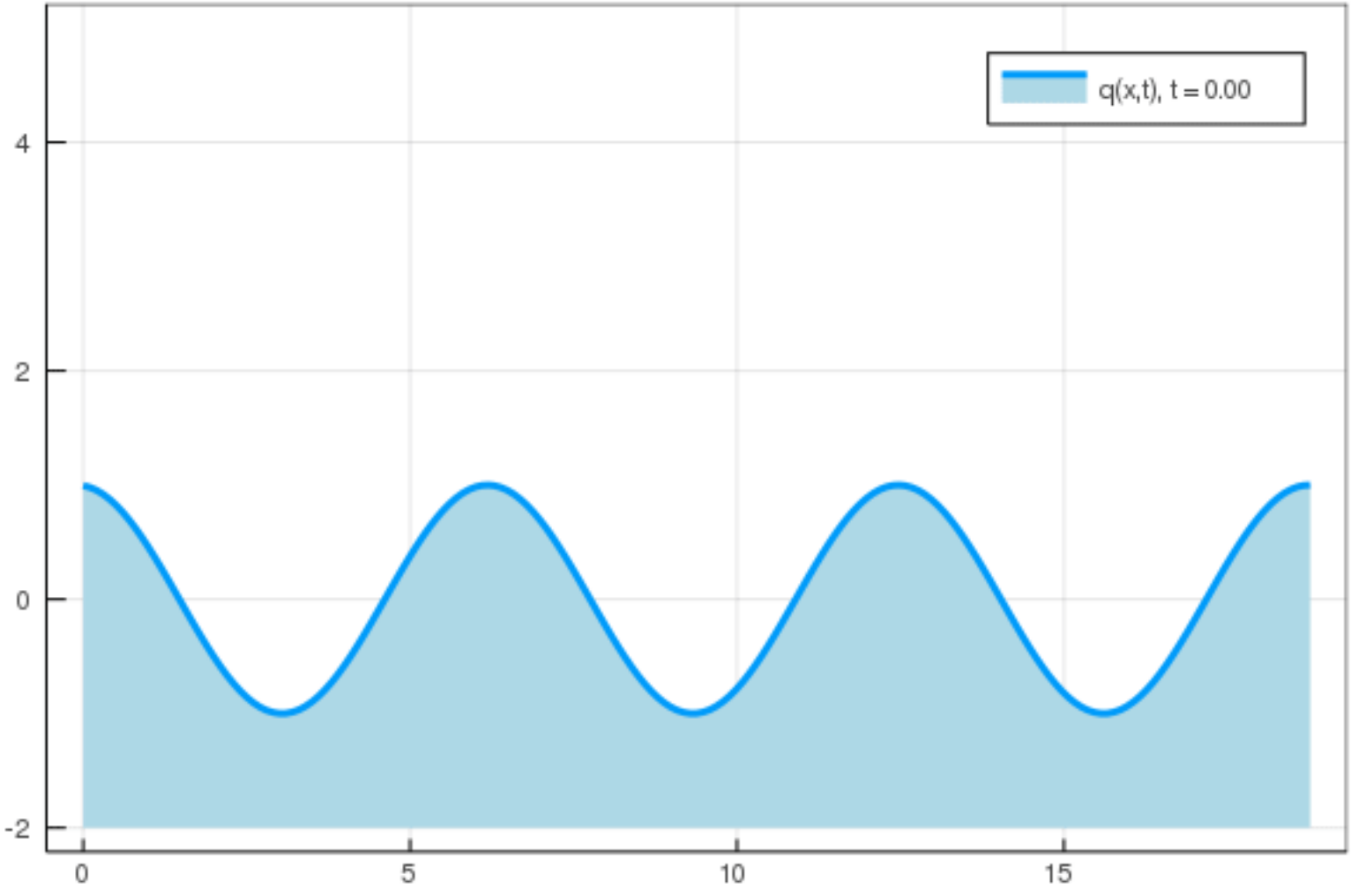
Example 1.a: Cosine initial data

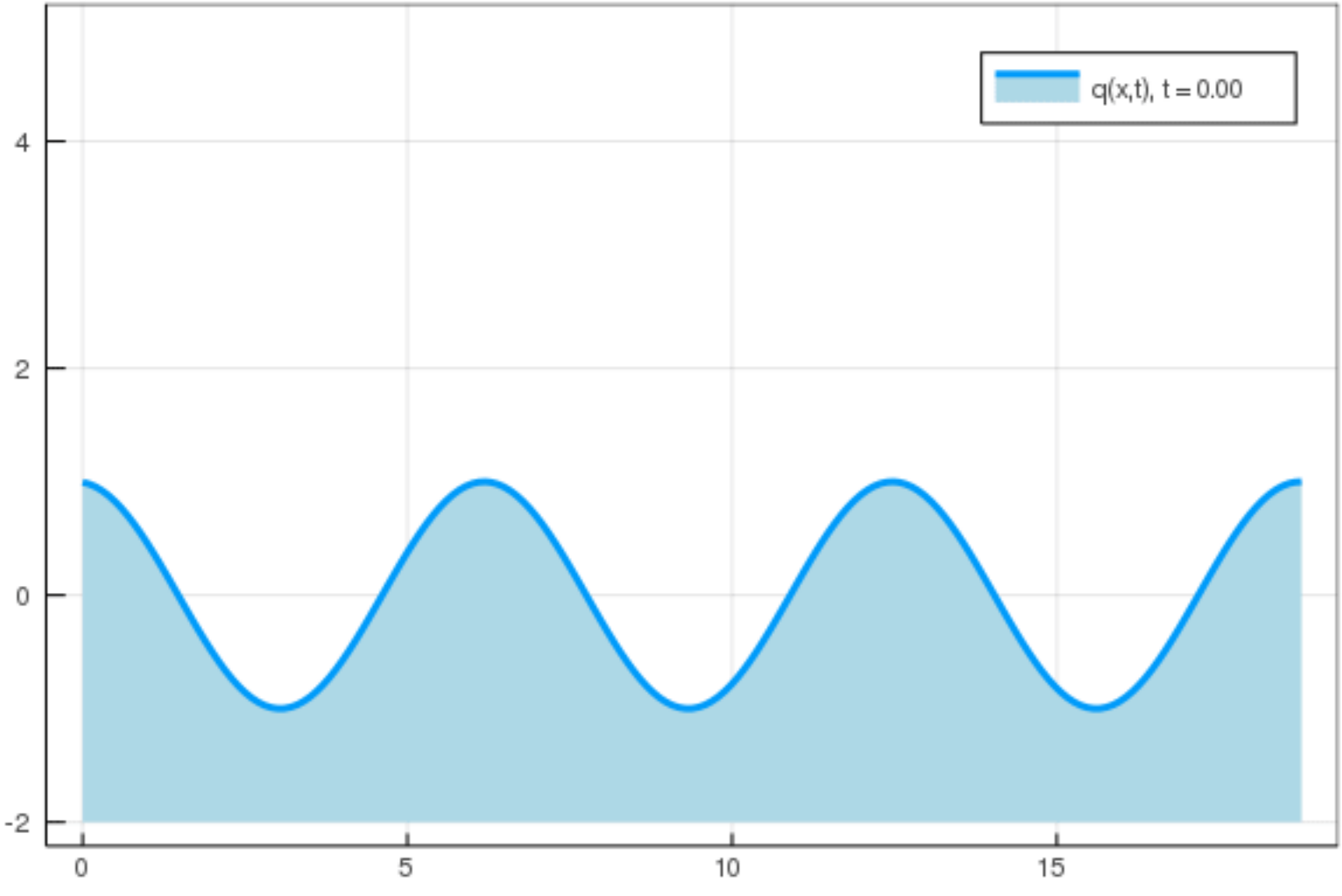
$$q_t + qq_x + \delta^2 q_{xxx} = 0, \quad x \in [0, 2\pi), \quad t > 0,$$
$$q(x,t) = q(x + 2\pi, t),$$
$$q(x,0) = \cos(x).$$

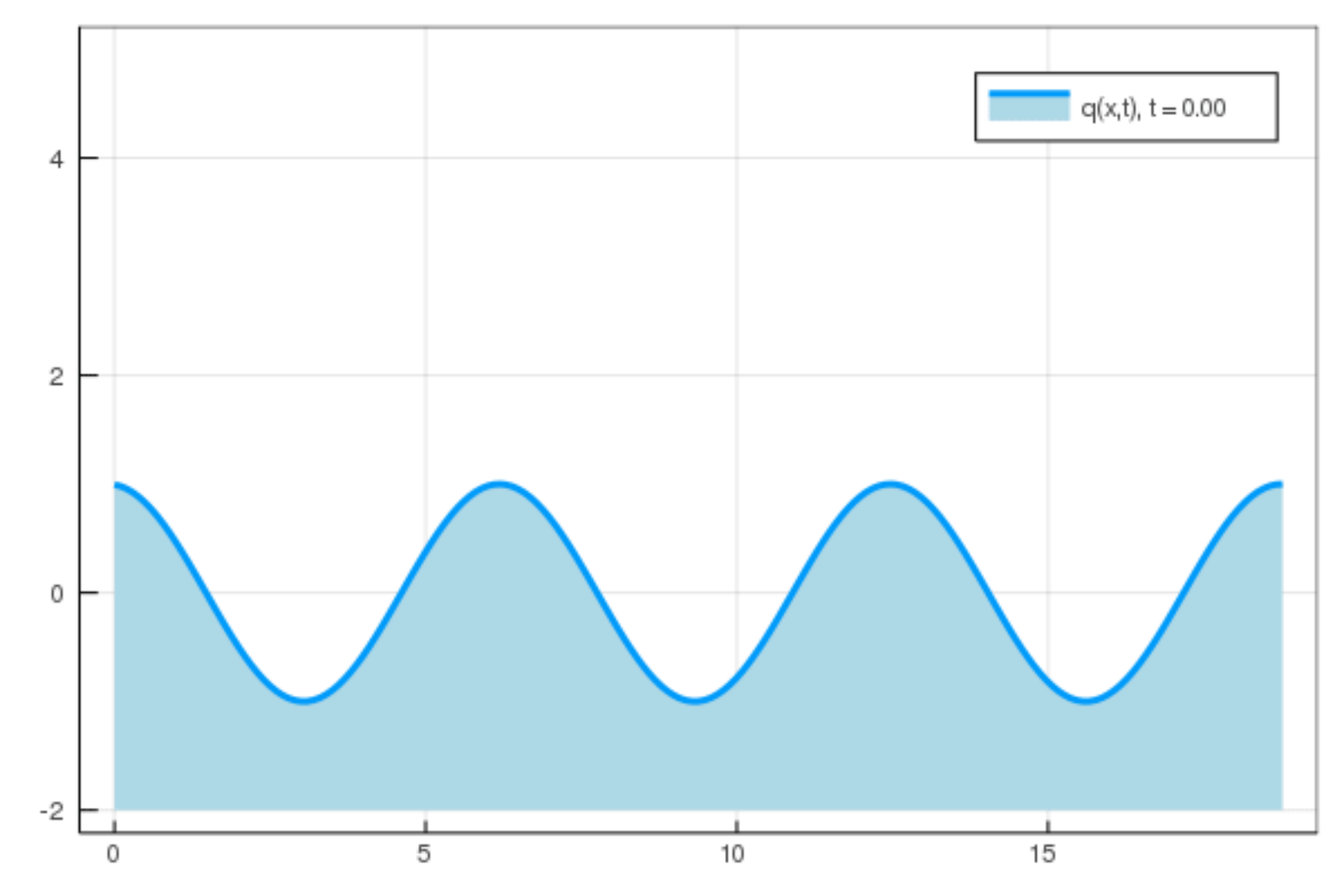
```
15×2 Array{Float64,2}:
 -0.49353     0.367011
  0.457722    0.941054
  1.36853     1.50714
  2.41864     2.43406
  3.73614     3.73699
  5.35378     5.35381
  7.27178     7.27178
  9.48824     9.48824
 12.0021     12.0021
 14.8129     14.8129
 17.9204     17.9204
 21.3243     21.3243
 25.0245     25.0245
 29.021      29.021
 33.3137     33.3137
```

```
15-element Array{Float64,1}:
 0.8605406708802891
 0.4833314602139 77
 0.1386068656187 6623
 0.0154205618193 71681
 0.0008517721582448345
 2.9247215137750 97e-5
 6.9118441281545 98e-7
 1.1957725476463565e-8
 1.5856649326906336e-10
 1.5720758028692217e-12
 7.4606987254810 52e-14
 1.2434497875801753e-13
 4.5830006456526 46e-13
 3.6948222259525 21e-13
 8.8817841970012 52e-13
```


q(x,t), t = 0.00
4
2
0
-2
0
5
10
15

$\delta = 0.1$

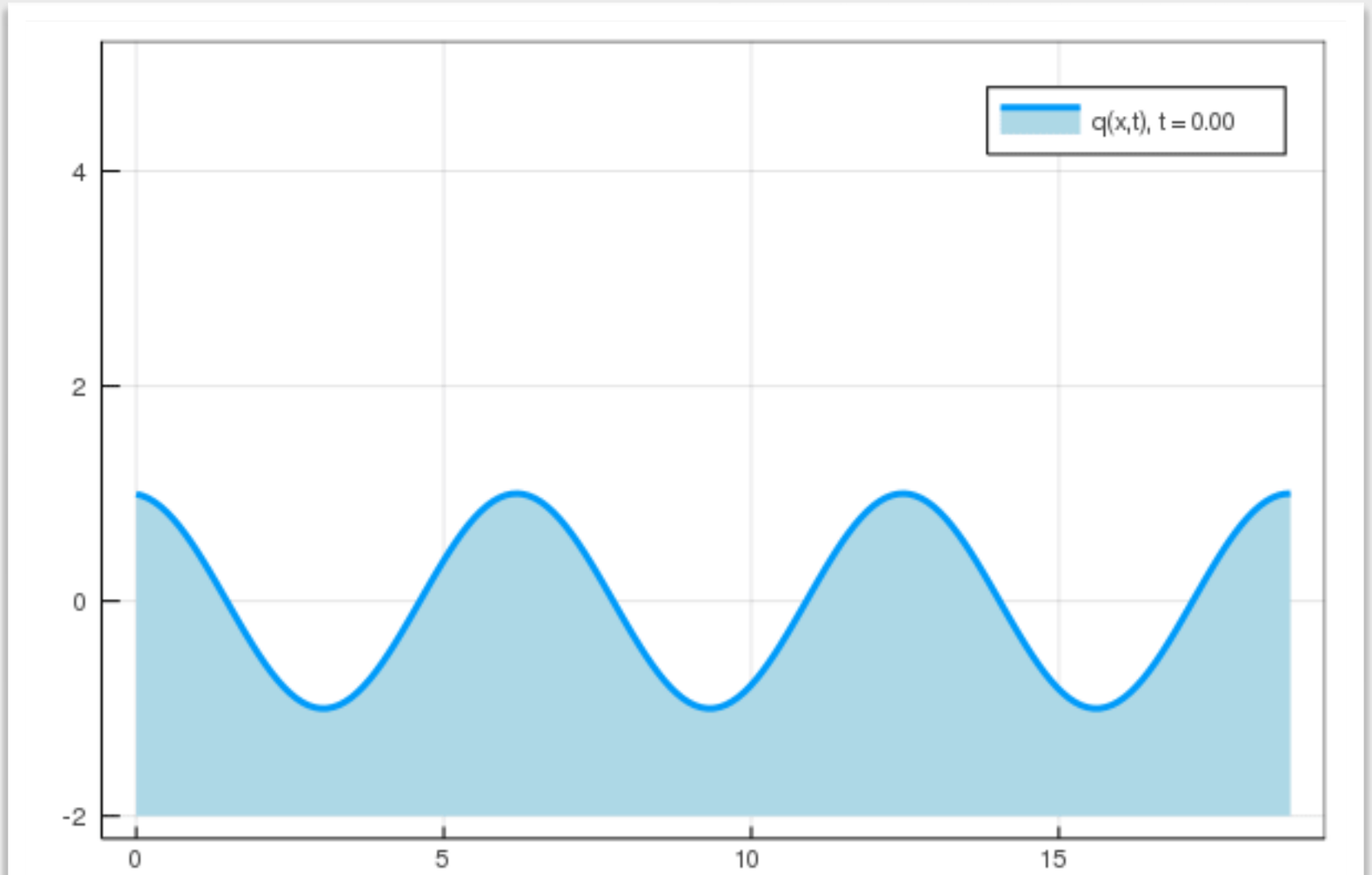

q(x,t), t = 0.00
4
2
0
-2
0
5
10
15


q(x,t), t = 0.00
4
2
0
-2
0
5
10
15

Example 1.a: Cosine initial data

$$q_t + qq_x + \delta^2 q_{xxx} = 0, \quad x \in [0, 2\pi), \quad t > 0,$$
$$q(x,t) = q(x+2\pi, t),$$
$$q(x,0) = \cos(x).$$

$\delta = 0.1$



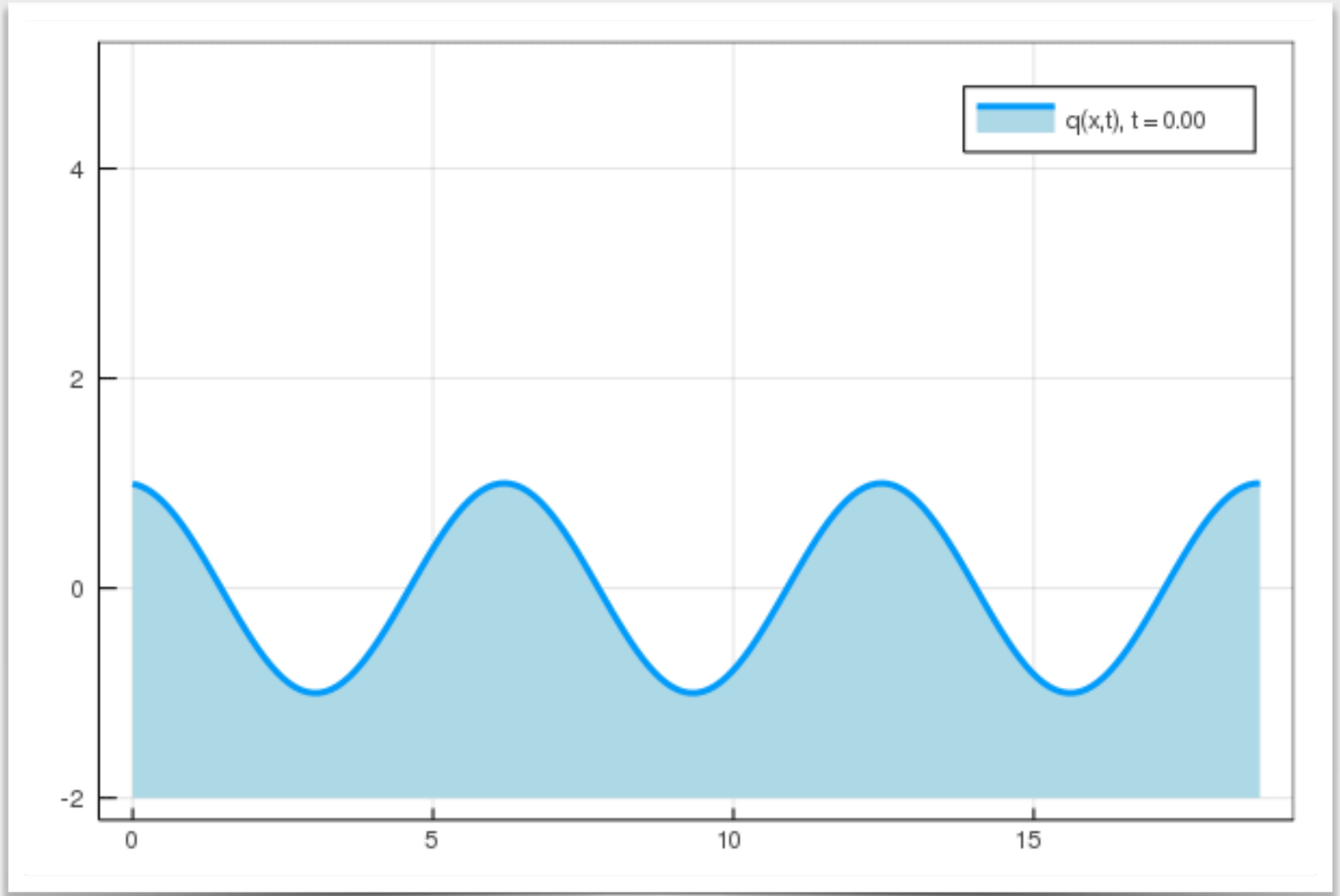

```
15×2 Array{Float64,2}:
 -0.49353     0.367011
  0.457722    0.941054
  1.36853     1.50714
  2.41864     2.43406
  3.73614     3.73699
  5.35378     5.35381
  7.27178     7.27178
  9.48824     9.48824
 12.0021     12.0021
 14.8129     14.8129
 17.9204     17.9204
 21.3243     21.3243
 25.0245     25.0245
 29.021      29.021
 33.3137     33.3137
```

```
15-element Array{Float64,1}:
 0.8605406708802891
 0.483331460213977
 0.13860686561876623
 0.015420561819371681
 0.0008517721582448345
 2.924721513775097e-5
 6.911844128154598e-7
 1.1957725476463565e-8
 1.5856649326906336e-10
 1.5720758028692217e-12
 7.460698725481052e-14
 1.2434497875801753e-13
 4.583000645652646e-13
 3.694822225952521e-13
 8.881784197001252e-13
```

Example 1.b: Cosine initial data

$$q_t + qq_x + \delta^2 q_{xxx} = 0, \quad x \in [0, 2\pi), \quad t > 0,$$
$$q(x,t) = q(x+2\pi, t),$$
$$q(x,0) = \cos(x).$$

$\delta = 0.08$




```
15×2 Array{Float64,2}:
 -0.589564    0.160649
  0.180168    0.718802
  0.873261    1.11822
  1.58261     1.63404
  2.4224      2.42721
  3.44882     3.44908
  4.67026     4.67027
  6.08488     6.08488
  7.69112     7.69112
  9.48816     9.48816
 11.4755     11.4755
 13.653      13.653
 16.0203     16.0203
 18.5774     18.5774
 21.3242     21.3242
```

```
15-element Array{Float64,1}:
 0.7502135124881996
 0.5386340453480183
 0.24496395819929884
 0.051437346110983384
 0.004812627884122733
 0.0002649828722747216
 9.895849066410278e-6
 2.6906509198454387e-7
 5.577151185320872e-9
 9.101519538035063e-11
 9.9298347322474e-13
 1.4033219031261979e-13
 5.6843418860808e-14
 2.4868995751603507e-14
 6.821210263296962e-13
```