

EXAMPLE: In 2013, the U.S. Post Office charged to ship a flat envelope first class to Eastern Europe, Europe, or Australia a fee of \$2.05 for up to and including the first ounce, \$.85 for each additional ounce or fraction of an ounce up to and including 8 ounces, and then \$1.70 for each additional four ounces or less, up to a peak of 64 ounces. Let $D(x)$ represent the cost to send a flat envelope weighing x ounces. Graph $D(x)$ for x in the interval $(0, 20]$.

Solution:

For x in the interval $(0, 1]$, $y = 2.05$.

For x in $(1, 2]$, $y = 2.05 + .85 = 2.90$.

For x in $(2, 3]$, $y = 2.90 + .85 = 3.75$.

And so on up to x in $(7, 8]$, $y = 7.15 + .85 = 8.00$.

Then for x in $(8, 12]$, $y = 8.00 + 1.70 = 9.70$.

For x in $(12, 16]$, $y = 9.70 + 1.70 = 11.40$.

For x in $(16, 20]$, $y = 11.40 + 1.70 = 13.10$.

The graph, which is that of a step function, is shown in the Figure below.

