



Display 6.17

Even when it makes sense to extend the graph of a function from a few known points to a much larger domain, there may be more than one sensible way to do it. Here is an example, based on a function used in everyday life.



The state of Maine has a 5% sales tax; that is, the tax is 1 cent for every 20 cents. Every taxable item sold has a certain amount of tax added to its price. This means that the 5% sales tax process is a function that assigns a tax amount to each price. If we think in pennies, this tax function sets up the pairings shown in Display 6.18. Thus, the graph of this function, which we'll call f , contains the points

$$(20, 1) \quad (40, 2) \quad (60, 3) \quad (80, 4) \quad (100, 5)$$

These five points are shown in Display 6.19.

How can we extend the graph in Display 6.19 to show how this tax function f works on *all* possible prices; that is, on all positive real numbers?