# Exercise 61

The cost in dollars of making $x$ items is given by the function $C(x) = 10x + 500$.

(a) The fixed cost is determined when zero items are produced. Find the fixed cost for this item.

(b) What is the cost of making 25 items?

(c) Suppose the maximum cost allowed is \$1500. What are the domain and range of the cost function, $C(x)$?

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**Solution**

**Part (a)**

Plug in $x = 0$ to the function to determine the fixed cost.

$$C(0) = 10(0) + 500 = 0 + 500 = 500$$

Therefore, the fixed cost is \$500.

**Part (b)**

To determine the cost of making 25 items, plug in $x = 25$ to the function.

$$C(25) = 10(25) + 500 = 250 + 500 = 750$$

Therefore, the cost of making 25 items is \$750.

**Part (c)**

Set $C(x) = 1500$ and solve for $x$, the number of items that can be made with this amount.

$$C(x) = 10x + 500 = 1500$$

$$10x = 1000$$

$$x = 100$$

The domain is $[0, 100]$, and the range is $[500, 1500]$.