

## 8.1 - Functions of Two or More Independent Variables

**Recall:** A cost function might look like  $y = C(x) = 500 + 7x$ .

With two independent variables:  $z = C(x, y) = 700 + 70x + 100y$

Plot:  $z = f(x, y) = (1, 2, 1)$

Evaluate:  $C(10, 5)$

### **Revenue, Cost, Profit**

Suppose a surfboard company has determined that the demand equations for two types of boards it produces are given by

$$p = 210 - 4x + y \quad (\text{price of the standard board})$$

$$q = 300 + x - 12y \quad (\text{price of the competition board})$$

where  $x$  is the weekly demand for standard boards and  $y$  is the weekly demand for competition boards. Define  $C(x, y)$  as above.

a. Find the weekly revenue function and evaluate  $R(20, 10)$ .

b. Find the weekly profit function.

Some 3-D graphs: p. 454-455

$z = x^2 + y^2$  is a paraboloid.

$r^2 = x^2 + y^2 + z^2$  is a sphere.

HW # 1 -21 (every other odd), 51, 52