

3. [8 points] Rachel is the online marketing manager at a dress shop. She is running a week-long (168 hour) Facebook promotion for a specific dress starting Monday at 12:00am. The price of the dress changes according to how many times it has been viewed on Facebook since the start of the promotion. Let  $V(h)$  be the total number of times the dress has been viewed on Facebook during the first  $h$  hours of the promotion. Let  $P(v)$  be the price of the dress, in dollars, after it has been viewed  $v$  times during the promotion.

a. [3 points] Assuming  $P^{-1}$  is a function, give a practical interpretation of the expression  $P^{-1}(200) = 350$ .

*Solution:* The price of the dress is \$ 200 after it has been viewed on Facebook 350 times.

b. [3 points] Give a practical interpretation of the expression  $P(V(100))$ .

*Solution:*  $P(V(100))$  is the price of the dress, in dollars, 100 hours into the promotion.

c. [2 points] Compare the quantities below by writing one of the symbols  $\leq$ ,  $\geq$ , or  $=$  in the blank, or by writing “N” if there is not enough information in the problem to compare them. You do not need to justify your answer.

$$V(20) \underline{\leq} V(35).$$

4. [4 points] Suppose quantities  $Q$ ,  $E$ , and  $D$  are temperatures in  $^{\circ}F$  at three different locations near Phoebe’s apartment building measured at five different times during the winter. Which of  $Q$ ,  $E$  and  $D$  could be a function of another?

$Q$	13.2	4	0	3.2	3
$E$	19	-1	11	17.25	-1
$D$	23.7	-8	15	12.3	-18

Circle all of the following statements that **could** be true:

$Q$  is a function of  $E$ .

$Q$  is a function of  $D$ .

$E$  is a function of  $D$ .

$E$  is a function of  $Q$ .

$D$  is a function of  $E$ .

None of these.