

6. [11 points] Jose's business is now selling fuzzy gloves. He has 100 pairs to sell for \$6 a pair. Jose's friend Neil has his own business making fuzzy fabric and makes a deal with Jose: if Jose sells all 100 pairs of gloves, Neil will provide fabric that will allow Jose to sell up to 300 additional pairs for \$9 a pair, as long as Neil gets \$2 from each pair sold.

Jose wants a function $J(p)$ for the amount of money, in dollars, he would make if he sold p pairs of gloves and gave Neil his share, if applicable.

- a. [1 point] What is the domain of J in the context of this problem? Use either inequality or interval notation.

Domain: _____

- b. [4 points] Write a piecewise-defined formula for the function $J(p)$ on its domain.

$$\text{Answer: } J(p) = \begin{cases} \text{_____} & \text{for } \text{_____} \\ \text{_____} & \text{for } \text{_____} \end{cases}$$

Neil also wants a function $N(p)$ for the amount of money, in dollars, he would make if Jose sells p pairs of gloves.

- c. [3 points] Write a piecewise-defined formula for the function $N(p)$.

$$\text{Answer: } N(p) = \begin{cases} \text{_____} & \text{for } \text{_____} \\ \text{_____} & \text{for } \text{_____} \end{cases}$$

- d. [3 points] If the fabric Neil plans to give Jose costs \$500, how many pairs of gloves, in total, does Jose have to sell for Neil to recoup his costs, that is, for Neil to make \$500? Show all of your work.

Answer: _____