Logic Classwork – Implicational Rules of Inference

Identify the Implicational rule being used in each of the following examples.

1. $\sim P \rightarrow (Q \cdot R)$
   $(Q \cdot R) \rightarrow S$
   $\therefore \sim P \rightarrow S$

2. $X \vee (Y \leftrightarrow Z)$
   $\sim (Y \leftrightarrow Z)$
   $\therefore X$

3. $\sim M \vee \sim N$
   $\sim M \rightarrow \sim O$
   $\sim N \rightarrow \sim P$
   $\therefore \sim O \vee \sim P$

4. $L \rightarrow (M \rightarrow N)$
   L
   $\therefore M \rightarrow N$

5. $(C \rightarrow D) \cdot (E \vee F)$
   $\therefore E \vee F$

Bonus: Complete the following proof, indicate from which steps each inference is drawn and by which rule the inference is made. See example: $1. D \rightarrow V$
$2. \sim V$
$\therefore \sim D$
$3. \sim D \qquad MT\ 1,2$

1. $W \rightarrow M$
2. $N \rightarrow \sim M$
3. N

$\therefore \sim W$