

# Practice Final Errors on the Inequalities

$$(3) (x-1)^2(x+2)^3(2x-3) \geq 0$$

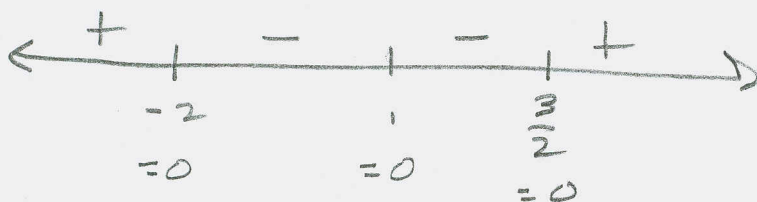
Notice from Gary Partridge:

"Isn't  $x=1$  part of the solution?"

The answer is "yes," because  $x=1$  means

$$(x-1)^2(x+2)^3(2x-3) = 0 \text{ and } "=0" \text{ is part}$$

of  $\geq 0$ . This gives a subtle change to the final answer. Same sign pattern?



Instead of  $(-\infty, -2] \cup [\frac{3}{2}, \infty)$ , we also need the single point  $x=1$ , i.e.,  $\{1\}$  in there:

$$D = (-\infty, -2] \cup \{1\} \cup [\frac{3}{2}, \infty)$$

$$T = \{x \mid -\infty < x \leq -2 \text{ OR } x=1 \text{ OR } \frac{3}{2} \leq x < \infty\}$$

This consideration also impacts #5 6 & 7:

$$(6) D = (-\infty, -2] \cup \{1\} \cup [\frac{3}{2}, \infty), \text{ etc. (SAME AS \#3)}$$

$$(7) D = (-\infty, -2) \cup \{1\} \cup [\frac{3}{2}, \infty)$$

$$= \{x \mid -\infty < x < -2 \text{ OR } x=1 \text{ OR } \frac{3}{2} \leq x < \infty\}$$

Recall  $x=-2$  was bad, from  $(x+2)^3$  downstairs.