4. State the volume of the open box, $v(x)$, in terms of x, in descending order.

$4x^3-39x^2+93.5x$

$V(x)=L(W)(H)$

$V(x)=(-2x+8\tfrac{1}{2})(-2x+11)(x)$

$V(x)=(+4x^2-22x\cancel{-17x}+93.5)(x)$

$-39x$

$V(x)=4x^3-39x^2+93.5x$

5. State the inequality if we want the volume of the open box to be at least $37\frac{1}{2}$ cubic inches.

$37\frac{1}{2}\le 4x^3-39x^2+93.5x$

Solve the inequality by following the next steps.

6. Make the right side of the inequality zero by adding or subtracting the same value on both sides.

$4x^3-39x^2+93.5x-37\tfrac{1}{2}\ge 0$

7. Multiply both sides of the inequality by the smallest positive number so that all the coefficient of the inequality are integers.

$\left(\frac{2}{1}\right)4x^3-39x^2+93.5x-37\tfrac{1}{2}=0\left(\frac{2}{1}\right)$

$8x^2-78x^2+187x-75\ge 0$

8. Let the left side of the inequality be $f(x)$.

$f(x)=$ $8x^3-78x^2+187x-75$

9. Use the Rational Zero Theorem to state all possible rational zeros for $f(x)$.

$P=\pm1,\pm3,\pm5,\pm15,\pm25,\pm75$

$Q=\pm1,\pm2,\pm4,\pm8$

$\frac{P}{Q}=\pm1,\pm3,\pm5,\pm15,\pm25,\pm75,\pm\frac{1}{2},\pm\frac{3}{2},\pm\frac{5}{2},\pm\frac{15}{2},\pm\frac{25}{2},\pm\frac{75}{2},$
$\pm\frac{1}{4},\pm\frac{3}{4},\pm\frac{5}{4},\pm\frac{15}{4},\pm\frac{25}{4},\pm\frac{75}{4},\pm\frac{1}{8},\pm\frac{3}{8},\pm\frac{5}{8},\pm\frac{15}{8},\pm\frac{25}{8},\pm\frac{75}{8}$