

7.7. (con't) pg 455

Ex#4: $3 + \sqrt{5x - 10} \leq 8$ check

$$\begin{array}{r} 5x - 10 \geq 0 \\ +10 \quad 10 \\ \hline 5x \geq 10 \\ \div 5 \quad 5 \\ \hline x \geq 2 \end{array}$$

$$\begin{array}{r} \sqrt{5x - 10} \leq 5 \\ \hline 5x - 10 \leq 25 \\ +10 \quad +10 \\ \hline 5x \leq 35 \\ \div 5 \quad 5 \\ \hline x \leq 7 \end{array}$$

$2 \leq x \leq 7$

~~4~~ ~~2~~ ~~7~~

$$\begin{array}{r} 3 + \sqrt{5 \cdot 10} \leq 8 \\ 3 + \sqrt{50} \leq 8 \\ \hline 3 + 7.07 \leq 8 \\ 10.07 \leq 8 \quad \text{Not true} \end{array}$$

$$\begin{array}{r} 3 + \sqrt{5 \cdot 6} \leq 8 \\ 3 + \sqrt{30} \leq 8 \\ \hline 3 + 5.47 \leq 8 \\ 8.47 \leq 8 \quad \text{Not true} \end{array}$$

$$\begin{array}{r} 3 + \sqrt{5 \cdot 9} \leq 8 \\ 3 + \sqrt{45} \leq 8 \\ \hline 3 + 6.7 \leq 8 \\ 9.7 \leq 8 \quad \text{Not true} \end{array}$$

$$\begin{array}{r} 3 + \sqrt{5 \cdot 12} \leq 8 \\ 3 + \sqrt{60} \leq 8 \\ \hline 3 + 7.75 \leq 8 \\ 10.75 \leq 8 \quad \text{Not true} \end{array}$$

$$\begin{array}{r} 3 + \sqrt{5 \cdot 15} \leq 8 \\ 3 + \sqrt{75} \leq 8 \\ \hline 3 + 8.66 \leq 8 \\ 11.66 \leq 8 \quad \text{Not true} \end{array}$$

pg 456

1. $\sqrt{x-4} + 6 = 10$

$$\begin{array}{r} \sqrt{x-4} + 6 = 10 \\ -6 \quad -6 \\ \hline \sqrt{x-4} = 4 \\ \hline x-4 = 16 \\ +4 \quad +4 \\ \hline x = 20 \end{array}$$

2. $\sqrt{x+13} - 8 = -2$

$$\begin{array}{r} \sqrt{x+13} - 8 = -2 \\ +8 \quad +8 \\ \hline \sqrt{x+13} = 6 \\ \hline x+13 = 36 \\ -13 \quad -13 \\ \hline x = 23 \end{array}$$

6. $(x-5)^{1/3} - 4 = -2$

$$\begin{array}{r} (x-5)^{1/3} - 4 = -2 \\ +4 \quad +4 \\ \hline (x-5)^{1/3} = 2 \\ \hline x-5 = 8 \\ +5 \quad +5 \\ \hline x = 13 \end{array}$$

9. $\sqrt[3]{n+8} - 4 = -2$

$$\begin{array}{r} \sqrt[3]{n+8} - 4 = -2 \\ +4 \quad +4 \\ \hline \sqrt[3]{n+8} = 2 \\ \hline n+8 = 8 \\ -8 \quad -8 \\ \hline n = 0 \end{array}$$

10. $x + 4z^{1/2} = 0$

$$\begin{array}{r} x + 4z^{1/2} = 0 \\ -x \quad -x \\ \hline 4z^{1/2} = -x \\ \hline z^{1/2} = -x/4 \\ \hline (z^{1/2})^2 = (-x/4)^2 \\ \hline z = x^2/16 \end{array}$$

extraneous soln.

16. $\sqrt{b-7} + 6 \leq 12$

$$\begin{array}{r} \sqrt{b-7} + 6 \leq 12 \\ -6 \quad -6 \\ \hline \sqrt{b-7} \leq 6 \\ \hline b-7 \leq 36 \\ +7 \quad +7 \\ \hline b \leq 43 \end{array}$$

$7 \leq b \leq 43$

7.7. (Cont) pg 455

Check

Ex #4: $x + \sqrt{5x - 10} \leq 8$

$3 + \sqrt{0 - 10} \leq 8$

$5x - 10 \geq 0$

$\sqrt{5x - 10} \leq 5$

$3 + \sqrt{10} \leq 8$ ~~X~~

$5x \geq 10$

$(\sqrt{5x - 10})^2 \leq 5^2$

$3 + \sqrt{3.6} \leq 8$ ~~X~~ Not real

$x \geq 2$

$5x - 10 \leq 25$

$3 + \sqrt{50} - 10 \leq 8$

$2 \leq x \leq 7$

$x \leq 7$

$3 + \sqrt{16}$

$3 + 3.9 \leq 8$ ✓

$3 + \sqrt{50 - 10} \leq 8$

$3 + 6.3 \leq 8$

pg 456.

1. $\sqrt{x - 4} + 6 = 10$

2. $\sqrt{x + 13} - 8 = -2$

$(\sqrt{x - 4})^2 = (4)^2$

$(\sqrt{x + 13})^2 = (6)^2$

$x - 4 = 16$

$x + 13 = 36$

$x = 20$

$x = 23$

6. $(x - 5)^{1/3} - 4 = -2$

8. $\sqrt[3]{n + 8} - 4 = -2$

$(x - 5)^{1/3} = (2)^3$

$(\sqrt[3]{n + 8})^3 = (2)^3$

$x - 5 = 8$

$n + 8 = 8$

$x = 13$

$n = 0$

10. $x + 4z^{1/2} = 0$

16. $\sqrt{b - 7} + 6 \leq 12$

$4z^{1/2} = -2$

$b - 7 \geq 0$

$(\sqrt{b - 7})^2 \leq (-6)^2$

$(z^{1/2})^2 = (-1/2)^2$

$b - 7 \leq 36$

$z = 1/4$

$7 \leq b \leq 43$

extraneous soln.