

Solve **10.**  $\left(\sqrt{2x+1}\right)^2 = \left(x-7\right)^2$   $x \neq 7$

$$2x+1 = x^2 - 14x + 49$$

$$0 = x^2 - 16x + 48$$

$$0 = (x - 12)(x - 4)$$

$$x = 12 \quad x \neq 4$$

$$13. x - 2\sqrt{x-3} = 3$$

$$2\sqrt{x-3} = x-3$$

$$\# \left( + 2\sqrt{x-3} \right) = (x-3)$$

$$\left( 2\sqrt{x-3} \right)^2 = (x-3)(x-3)$$

$$4(x-3) = x^2 - 6x + 9$$

$$4x - 12 = x^2 - 6x + 9$$

$$0 = x^2 - 10x + 21$$

$$0 = (x-7)(x-3)$$

$$\begin{array}{l} x=7 \\ x=3 \end{array}$$

$$33. \sqrt{2x-3} - \sqrt{x-2} = 1$$

12.6 D1

$$\left(\sqrt{2x-3}\right)^2 = \left(1 + \sqrt{x-2}\right)^2$$

$$2x-3 = 1 + 2\sqrt{x-2} + x-2$$

$$\begin{array}{r} 2x-3 \\ -x+1 \\ \hline x-2 \end{array} = \begin{array}{r} 2\sqrt{x-2} \\ -x+1 \\ \hline \end{array}$$

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

$$x^2 - 4x + 4 = 4(x-2)$$

$$x^2 - 8x + 12 = 0$$

$$(x-6)(x-2) = 0$$

$$\begin{array}{c} x=6 \\ x=2 \end{array}$$

$$23. \sqrt{x+2} + \sqrt{x-1} = 3 \quad \text{Solve}$$

$$(\sqrt{x+2})^2 = (3 - \sqrt{x-1})^2$$

$$x+2 = 9 - 6\sqrt{x-1} + x-1$$

$$\begin{array}{r} x+2 = 8 - 6\sqrt{x-1} + x \\ \underline{-x-8} \qquad \underline{-8} \qquad \underline{-x} \end{array}$$

$$\underline{-6} = \underline{-6\sqrt{x-1}}$$

$$1 = \sqrt{x-1}$$

$$1 = x-1$$

$$\boxed{2 = x} \quad \text{end of 12.6}$$

$$21. \left( \sqrt{x-7} \right)^2 = \left( 7 - \sqrt{x} \right)^2$$

$$\begin{array}{r} x-7 = 49 - 14\sqrt{x} + x \\ \underline{-x \quad 49} \qquad \underline{-49} \qquad \underline{-x} \end{array}$$

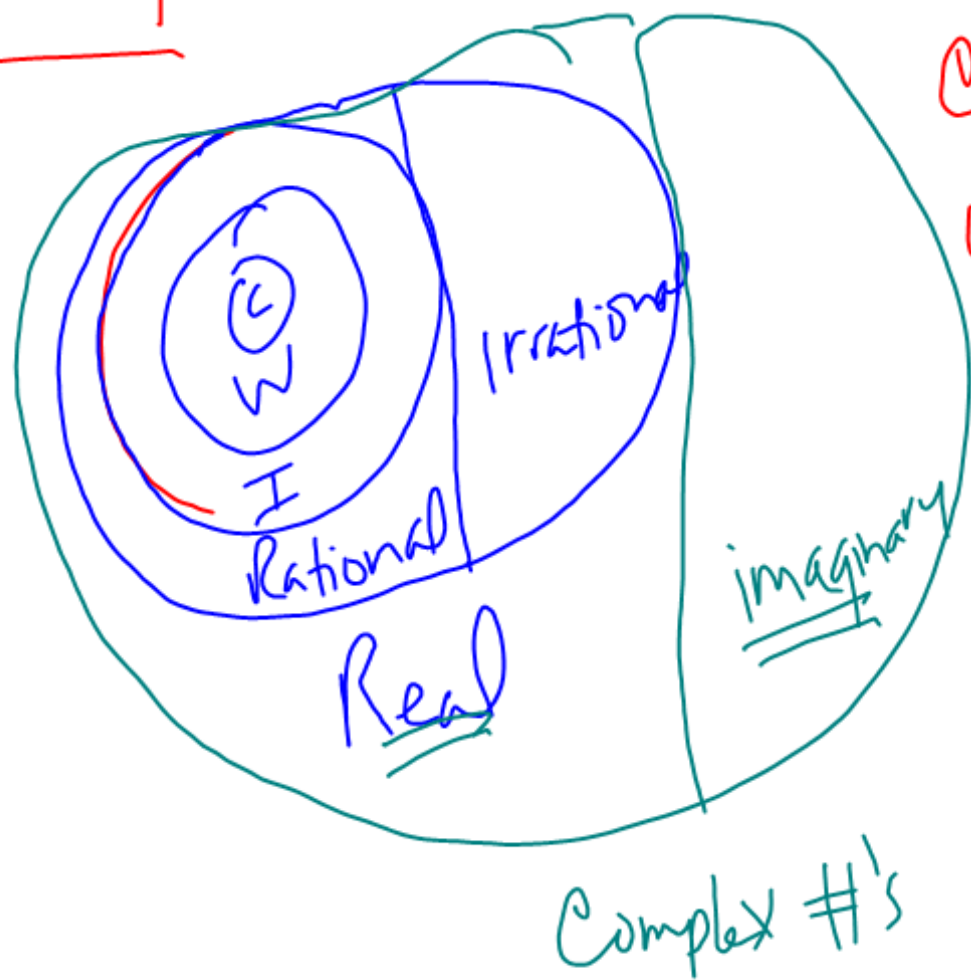
$$\begin{array}{r} -56 = -14\sqrt{x} \\ \underline{-14} \qquad \underline{-14} \end{array}$$

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

$$x = 16$$

end  
of  
12.6

12.7



$$\text{Country \#} = \{1, 2, 3, \dots\}$$

$$\text{Whole \#'s} = \{0, 1, 2, 3, \dots\}$$

$$\text{Integers} = \{\dots, -2, -1, 0, 1, 2, 3, \dots\}$$

$$\sqrt{-1} = i \quad \text{write in terms of } i$$

$$\sqrt{-4} = \sqrt{-1 \cdot 4} = \sqrt{-1} \cdot \sqrt{4}$$

$$2i$$

$$\sqrt{-36} = 6i$$

$$\sqrt{-8} = \sqrt{-1 \cdot 2^2 \cdot 2} = 2\sqrt{2}i$$

$$2i\sqrt{2}$$

4.2

$$\sqrt{i} = \sqrt[2]{\sqrt{-1}} \rightarrow \sqrt[4]{-1}$$

$$\sqrt{-4} \cdot \sqrt{-9} \neq \sqrt{-4 \cdot -9}$$

$$2i \cdot 3i$$

$$6i^2$$



$$i^2 = -1$$

$$\sqrt{25} = 5$$

$$\sqrt{-4} = +2i$$

$$S^2 \rightarrow$$

$$\sqrt{4} = +2$$

$$\sqrt{-1} = i$$

never  
happen  $\sqrt{\quad} \neq -2$

$$i^2 = -1$$

# all powers of $i$ Simplify

$$i^1 = i$$

$$i^2 = -1$$

$$i^3 = i^2 \cdot i = -1 \cdot i = -i$$

$$i^4 = i^2 \cdot i^2 = -1 \cdot -1 = 1$$

$$i^5 = i^4 \cdot i = 1 \cdot i = i$$

$$i^6 = i^4 \cdot i^2 = 1 \cdot -1 = -1$$

