

1.5 #85 from book

This \downarrow caused heartburn. Trust your training.

$$12x^2 + \sqrt{6}x - 1 = 0$$

$$a=12, b=\sqrt{6}, c=-1$$

$$b^2 - 4ac = (\sqrt{6})^2 - 4(12)(-1)$$

$$= 6 + 48$$

$$= 54 \rightsquigarrow \sqrt{54} = 3\sqrt{6}$$

$$\begin{array}{r} 2 \overline{) 54} \\ 3 \overline{) 27} \\ 3 \overline{) 9} \\ 3 \end{array}$$

2, 3, 5, 7, 11, 13, 17, 19, 23, ...

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-\sqrt{6} \pm \sqrt{54}}{2(12)}$$

$$= \frac{\sqrt{6} \pm 3\sqrt{6}}{24}$$

$$\begin{array}{l} \rightarrow \frac{-\sqrt{6} + 3\sqrt{6}}{24} \\ \rightarrow \frac{\sqrt{6} - 3\sqrt{6}}{24} \end{array}$$

$$\begin{array}{r} 2 \overline{) 396} \\ 2 \overline{) 198} \\ 3 \overline{) 99} \\ 3 \overline{) 33} \\ 11 \end{array}$$

$2 \cdot 3 \cdot 11 = 6\sqrt{11}$

$$= \frac{2\sqrt{6}}{24} \text{ OR } \frac{-4\sqrt{6}}{24}$$

$$= \boxed{\frac{\sqrt{6}}{12} \text{ OR } \frac{-\sqrt{6}}{6}}$$

Make it have nonreal solms (change this sign)

$$12x^2 + \sqrt{6}x + 1 = 0$$

$$a=12, b=\sqrt{6}, c=1$$

$$b^2 - 4ac = (\sqrt{6})^2 - 4(12)(1)$$

$$= 6 - 48$$

$$= -42$$

$$\sqrt{-42} = i\sqrt{42}$$

$$x = \frac{-\sqrt{6} \pm i\sqrt{42}}{2(12)}$$

$$\begin{array}{r} 2 \overline{) 42} \\ \underline{3} \\ 7 \end{array}$$

$$\sqrt{6} \sqrt{7}$$

$$\sqrt{-a^2} = i\sqrt{a^2}$$

$$\sqrt{6} \pm i\sqrt{6}\sqrt{7} = \sqrt{6}(1 \pm i\sqrt{7})$$

but who cares?