Example of an Extraneous Solution

p. 389 #24

$\sqrt{3x+7} = x - 1$

$((3x+7)^{1/2})^2 = (x-1)^2$ $(x-1)(x-1)$

$3x+7 = x^2 - 2x + 1$

$0 = x^2 - 5x - 6$

could factor

$(x-6)(x+1)$

$x = 6 ; -1$

$x = \frac{5 \pm \sqrt{25+24}}{2}$

$x = \frac{5+7}{2} = 6$

$x = \frac{5-7}{2} = -1$

Check:

$\sqrt{3x+7} = x - 1$

$x = 6$ $\sqrt{18+7} = 6 - 1$?

$5 = 5$ ✓

$x = -1$ $\sqrt{-3+7} = -1 - 1$?

$\sqrt{4} = -2$

$2 = -2$? NO

$x = -1$ is extraneous