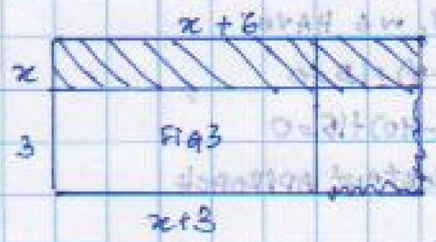
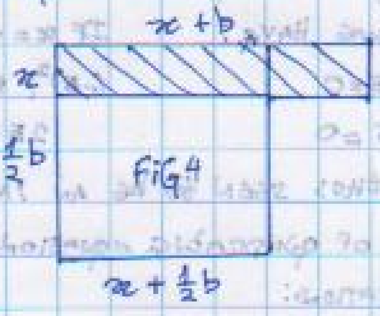
AND ~~THEN~~ TAKE THE SQUARE ROOT OF BOTH SIDES. THEN ~~$x=-3$~~
$x+3=\pm 0$, OR MERELY 0. TRANSPOSING, WE HAVE $x=3$, — p30
-3. TAKE ~~THE~~ FOR EXAMPLE THE EQUATION $x^2+6x+5=0$. 22/ /2018
THE PRODUCT x^2+6x IS COMPOSED OF THE FACTORS x
AND $x+6$. THESE MAY BE CONSIDERED SIDES OF A RECTANGLE
WICH WE WISH TO CONVERT INTO A SQUARE:





BY TAKING 3 UNITS FROM THE LONG SIDE AND ADDING 3 UNITS TO THE SHORT SIDE, WE OBTAIN A SQUARE OF $x+3$. THE AREA OF THIS SQUARE IS $(x+3)^2$ OR $(x+3)(x+3)$ WICH IS x^2+6x+9. COMPARING THIS WITH THE LEFT MEMBER OF THE ORIGINAL EQUATION, WE SEE THAT BY SUBTRACTING 5 FROM BOTH MEMBERS OF THE EQUATION THEN ADDING 9 TO x^2+6x, THE LEFT SIDE CAN BE MADE A PERFECT SQUARE.

$$\left\{\begin{array}{l} x^2+6x+5-5+9=-5+9 \\ x^2+6x+9=-5+9 \end{array}\right.$$

~~$x^2+6x+9 \quad = 6x+x^2+5$~~

~~$x^2+6x+9-5 \quad 6x+x^2+5-9$~~

$$x^2+6x+9=-5+9 \qquad x^2+6x+9=4$$ + Livro

THEN TAKING THE SQUARE ROOT OF BOTH SIDES AS BEFORE:

$$(x+3)=\pm 2$$

$$x=\pm 2-3 \quad \text{AND} \quad x=+1 \text{ OR } -5$$

THIS METHOD CAN LEAD TO A FORMULA FOR SOLVING ANY QUADRATIC EQUATION. CONSIDER A TRINOMIAL LIKE: x^2+6x+9 WICH IS A PERFECT SQUARE. NOTE THAT BOTH FIRST AND LAST TERMS ARE SQUARES (x^2 AND 9) THAT THE MIDDLE TERM IS TWICE THE PRODUCT OF THEIR SQUARE ROOTS ($2\times 6\times x$ OR $6x$). IN ORDER TO BUILD A PERFECT SQUARE, WE MUST SPLIT THE EXCESS OF ONE SIDE OVER THE OTHER EQUALLY BETWEEN THE TWO SIDES. USING FIG4 WE HAVE:

$$(x+\tfrac{1}{2}b)(x+\tfrac{1}{2}b)=x^2+bx+\tfrac{1}{4}b^2$$ — p31

TO MAKE x^2+bx A PERFECT SQUARE, WE TAKE ½ OF b (COEFFICIENT OF x), SQUARE IT, AND ADD IT TO x^2+bx. NOW

2020T10/14