PING YI SECONDARY SCHOOL

Perseverance Yields Success

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Subject E-Math No. 20 Date 19/1/2009

Ex. 3.3 <Pg 39>

5a) $x^2+18x = 13$ $\quad b=18,\ \frac{b}{2}=\frac{18}{2}=9$

$x^2+18x+(\frac{18}{2})^2 = 13+(\frac{18}{2})^2$

$(x+9)^2 = 13+81$

$x+9 = \pm\sqrt{94}$

$\therefore x+9 = -\sqrt{94}$ or $x+9=\sqrt{94}$

$x=-18.7$# $\quad x=0.695$#

b) $x(x-5) = 7(x+1)$

$x^2-5x = 7x+7$

$x^2-5x-7x = 7$

$x^2-12x+(\frac{12}{2})^2 = 7+(-\frac{12}{2})^2$

$(x-6)^2 = 7+(-6)^2$

$(x-6)^2 = 43$

$x-6 = \pm\sqrt{43}$

$\therefore x-6 = \sqrt{43}$ or $x-6=-\sqrt{43}$

$x=\sqrt{43}+6$ $\quad x=-\sqrt{43}+6$

$x=12.6$# $\quad x=-0.557$#

c) $(x-1)(x+8)=1-6x$

$x^2+7x-8 = 1-6x$

$x^2+7x+6x = 1+8$

$x^2+13x+(\frac{13}{2})^2 = 9+(\frac{13}{2})^2$

$(x+\frac{13}{2})^2 = 51\frac{1}{4}$

$x+\frac{13}{2} = \pm\sqrt{51\frac{1}{4}}$

$\therefore x+\frac{13}{2} = \sqrt{51\frac{1}{4}}$ or $x+\frac{13}{2}=-\sqrt{51\frac{1}{4}}$

$x=\sqrt{51\frac{1}{4}}-\frac{13}{2}$ $\quad x=-\sqrt{51\frac{1}{4}}-\frac{13}{2}$

$x=0.659$# $\quad x=-13.7$#

5 d) $(x-4)^2 = 9x$

$x^2 - 8x + 16 = 9x$

$x^2 - 8x - 9x = -16$

$x^2 - 17x + (-\frac{17}{2})^2 = -16 + (-\frac{17}{2})^2$

$(x - \frac{17}{2})^2 = 56\frac{1}{4}$

$x - \frac{17}{2} = \pm\sqrt{56\frac{1}{4}}$

$\therefore x - \frac{17}{2} = \sqrt{56\frac{1}{4}}$ or $x - \frac{17}{2} = -\sqrt{56\frac{1}{4}}$

$x = \sqrt{56\frac{1}{4}} + \frac{17}{2}$ or $x = -\sqrt{56\frac{1}{4}} + \frac{17}{2}$

$x = 16.0\#$ or $x = 1.00\#$

6) $x^2 + 4x = 300$

$x^2 + 4x + (\frac{4}{2})^2 = 300 + (\frac{4}{2})^2$

$(x + 2)^2 = 300 + 4$

$x + 2 = \pm\sqrt{304}$

$\therefore x + 2 = \sqrt{304}$ or $x + 2 = \sqrt{304}$

$x = \sqrt{304} - 2$ or $x = -\sqrt{304} - 2$

$= 15.4\#$ $x = -19.4$ (reject)

Ans: 15.4 cm

7) roots of quadratic eqn are $2 - \sqrt{3}$ and $2 + \sqrt{3}$

$(x - 2 + \sqrt{3})(x - 2 - \sqrt{3}) = 0$

$x(x - 2 - \sqrt{3}) - 2(x - 2 - \sqrt{3}) + \sqrt{3}(x - 2 - \sqrt{3}) = 0$

$x^2 - 2x - \sqrt{3}x - 2x + 4 + 2\sqrt{3} + \sqrt{3}x - 2\sqrt{3} - 3 = 0$

$x^2 - 4x + 1 = 0\#$

8) $(x - 1)^2 = -1$

Ans: Can not be solve. There is no real roots.