

ALGEBRA 1B Q3 QUIZ 1 SOLUTION/KEY

IDENTIFY THE a, b, c VALUES FOR THE QUADRATIC TRINOMIALS USED TO SOLVE THE FOLLOWING EQUATIONS:

① $5x^2 + 12x + 4 = 0$ SOLUTION \Rightarrow PUT IN $ax^2 + bx + c$ ORDER, IT IS ALREADY IN ORDER SO:
 $\begin{matrix} \uparrow & \uparrow & \uparrow \\ a & b & c \end{matrix}$ $a=5$ $b=12$ $c=4$

② $-4x^2 + x - 2 = 0$ $a=-4$ $b=1$ SINCE $x=1x$ AND $c=-2$

③ $x^2 - 5x = 6$ PUT IN CORRECT ORDER BY SUBTRACTING 6 FROM BOTH SIDES, READ OFF a, b, c
 $\begin{matrix} & -6 & -6 \\ \hline x^2 - 5x - 6 = 0 \end{matrix}$ $a=1$ $b=-5$ $c=-6$

⑤ IN $ax^2 + bx + c$ FORM, $b^2 - 4ac$ IS CALLED THE **DISCRIMINANT** BECAUSE IT DISCRIMINATES ("TELLS YOU IMPORTANT CHARACTERISTICS") BETWEEN DIFFERENT TYPES OF QUADRATIC TRINOMIALS. FOR EXAMPLE, IF $b^2 - 4ac$ IS A PERFECT SQUARE, THE QUADRATIC TRINOMIAL CAN BE FACTORED. IF IT IS NOT A PERFECT SQUARE, IT CANNOT BE FACTORED AND IS PRIME.

oops I SKIPPED #4

④ $10x + 15x^2 - 5 = 0$ PUT IN CORRECT ORDER, READ OFF a, b, c:
 $15x^2 + 10x - 5 = 0$ $a=15$ $b=10$ $c=-5$

⑥A FIND $b^2 - 4ac$ FOR $5x^2 - 3x + 15$ $a=5$ $b=-3$ $c=15$
 $b^2 - 4ac = (-3)^2 - 4(5)(15) = 9 - 20(15) = 9 - 300 = -291 = b^2 - 4ac$
 b) SINCE -291 IS NOT A PERFECT SQUARE, THE TRINOMIAL IS PRIME AND **CANNOT BE FACTORED.**

⑦ $8x^2 + 2x - 3 = 0$
 sum = 2 = b
 prod = -24 = a · c
 $\begin{matrix} & -4 & +6 \\ & \wedge & \wedge \\ & -4 & +6 \end{matrix}$
 $(8x^2 - 4x) + (6x - 3) = 0$
 $4x(2x - 1) + 3(2x - 1) = 0$
 $(2x - 1)(4x + 3) = 0 \therefore X = \left\{ \frac{1}{2}, -\frac{3}{4} \right\}$

⑧ $2x^2 - 13x - 7 = 0$
 sum = -13 = b
 prod = -14 = a · c
 $\begin{matrix} & +1 & -14 \\ & \wedge & \wedge \\ & +1 & -14 \end{matrix}$
 $(2x^2 - 14x) + (1x - 7) = 0$
 $2x(x - 7) + 1(x - 7) = 0$
 $(x - 7)(2x + 1) = 0 \therefore X = \left\{ 7, -\frac{1}{2} \right\}$

⑨ $4x^2 = x + 3$ Subtract x, subtract 3 from both sides
 $4x^2 - x - 3 = 0$
 sum = -1 = b
 prod = -12 = a · c
 $\begin{matrix} & +3 & -4 \\ & \wedge & \wedge \\ & +3 & -4 \end{matrix}$
 $(4x^2 - 4x) + (3x - 3) = 0$
 $4x(x - 1) + 3(x - 1) = 0$
 $(x - 1)(4x + 3) = 0 \therefore X = \left\{ 1, -\frac{3}{4} \right\}$

⑩ $2x^2 = -21x - 40$ Add +21x, +40 to both sides
 $2x^2 + 21x + 40 = 0$
 sum = 21 = b
 prod = 80 = a · c
 $\begin{matrix} & +5 & +16 \\ & \wedge & \wedge \\ & +5 & +16 \end{matrix}$
 $(2x^2 + 5x) + (16x + 40) = 0$
 $x(2x + 5) + 8(2x + 5) = 0$
 $(2x + 5)(x + 8) = 0 \therefore X = \left\{ -\frac{5}{2}, -8 \right\}$