9-4a Notes

Remember : Factor Perfect Square Trinomial $x^2 + 8x + 16$

① write $(\quad)^2$

② use middle sign

③ $\sqrt{1^{st}} \not{\xi} \sqrt{last}$

Completing the Square →

_____

_____

Find the value of "c" that makes the trinomial a perfect square.

ex 1 $x^2 + 22x + c$ ex 2 $x^2 - 9x + c$

ex 3 $x^2 + 7x + c$ ex 4 $x^2 - 24x + c$

9-4b Notes

Completing the Square Steps

① If $a \neq 1$ ÷ all parts by "a"

② Move "c" to the rt. side
   * leave the "hole"

③ Add "+ __" to both sides

④ Fill both blanks w/ $\left(\frac{b}{2}\right)^2$

⑤ Factor left side & add rt. side

⑥ Take $\sqrt{}$ of both sides

⑦ Make 2 equations & solve

$$2x^2 - 8x - 24 = 0$$

Solve by completing the square.

ex 1 $x^2 - 12x + 3 = 8$

ex 2 $-x^2 + 6x - 12 = -19$

ex 7 $3x^2 - 9x - 3 = 21$

9-5a Notes

Remember : When solving quadratic equation you get 2 ans

$$x^2 - 2x - 15 = 0$$

* the answers are called the "roots" of the equation

<u>Quadratic Formula</u> $\rightarrow$ _____

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve using the Quadratic Formula.

ex1 $x^2 - 12x + 20 = 0$ ex2 $3x^2 - 2x - 9 = 0$

ex 3 $2x^2 + 9x = -18$ ex4 $4x^2 - 11 = 4x$

9-5b Notes

What method should I use?

Method	When to Use
Factoring	Use when the constant is zero or factorable
Graphing	Use when an approximate solution is sufficient
Square Root Principle	Use when an eq can be written in the form $x^2 = n$, (no x term at all).
Completing the square	Can be use for any equation $ax^2 + bx + c = 0$, but is simplest to apply when "b" is even & "a" is 1.
Quadratic Formula	Can be used for any eq $ax^2 + bx + c = 0$.

Discriminant - _____

If $b^2 - 4ac < 0$ →

If $b^2 - 4ac = 0$ →

If $b^2 - 4ac > 0$ →

State the value of the discriminant and determine the number of real solutions for each equation.

ex1 $4x^2 + 5x = -3$ ex2 $2x^2 + 11x + 15 = 0$

ex 3 $9x^2 - 30x + 25 = 0$ ex 4 $x^2 - 12x + 20 = 0$