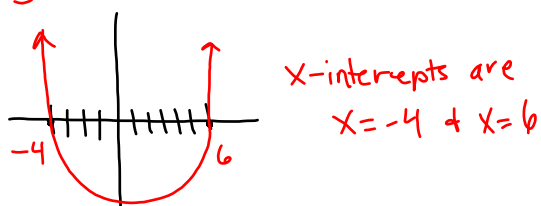


Four Methods to finding roots

- ① Graphing (EASY)
- ② Factoring (from 1201)
- ③ Completing the Square (least likely)
- ④ Quadratic Formula (Your fav.)

By Graphing:



② Factoring Review

A. GCF factoring

$$i) 2x^2 - 10x = 0$$

$$\text{GCF: } 2x$$

$$2x(x - 5) = 0$$

$$2x = 0 \quad \text{or} \quad x - 5 = 0$$

$$x = 0 \quad \quad \quad x = 5$$

B. Difference of Squares

$$i) 25x^2 - 81 = 0$$

$$(5x + 9)(5x - 9) = 0$$

$$\left. \begin{array}{l} 5x + 9 = 0 \\ 5x = -9 \\ x = -\frac{9}{5} \end{array} \right\} \left. \begin{array}{l} 5x - 9 = 0 \\ 5x = 9 \\ x = \frac{9}{5} \end{array} \right.$$

$$ii) 121p^2 - 1 = 0$$

$$(11p - 1)(11p + 1) = 0$$

$$\left. \begin{array}{l} 11p - 1 = 0 \\ p = \frac{1}{11} \end{array} \right\} \left. \begin{array}{l} 11p + 1 = 0 \\ p = -\frac{1}{11} \end{array} \right.$$

C. Add/Multiply Method * trinomial
 $x^2 + bx + c$

i) $x^2 + 7x + 10 = 0$

add $\Rightarrow 7$
 multiply $\Rightarrow 10$
5 + 2

$(x+5)(x+2) = 0$

$x+5=0$ $x+2=0$
 $x=-5$ $x=-2$

ii) $x^2 - 2x - 24 = 0$

add $\Rightarrow -2$
 multiply $\Rightarrow -24$
4 + -6

$(x+4)(x-6) = 0$

$x+4=0$ $x-6=0$
 $x=-4$ $x=6$

D. Decomposition * trinomial
 $ax^2 + bx + c$

i) $2x^2 - 9x - 5 = 0$

add: -9
 multiply: -10
 $-10 + 1$

$(2x^2 - 10x)(x - 5) = 0$
 GCF

$2x(x-5) + 1(x-5) = 0$

$(2x+1)(x-5) = 0$

$2x+1=0$ $x-5=0$
 $2x=-1$ $x=5$
 $x=-\frac{1}{2}$

ii) $3x^2 - 2x - 8 = 0$

add $\Rightarrow -2$
 mut $\Rightarrow -24$
 $-6 + 4$

$(3x^2 - 6x)(x - 8) = 0$

$3x(x-2) + 4(x-2) = 0$

$(3x+4)(x-2) = 0$

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