

Every Poly-  
nomial splits

$$x^2 - 2x - 7 = 0$$

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

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

$$x-1 = \pm 2\sqrt{2}$$

$$x = 1 \pm 2\sqrt{2}$$

FACTOR

Theorem!

EVERYTHING  
FACTORS! Fundamental  
Theorem of Algebra!

$$x^2 - 2x - 7 = \underbrace{(x - (1 + 2\sqrt{2})) (x - (1 - 2\sqrt{2}))}_{\text{Linear Factors! (x' = x to the 1st)}}$$

$$x^2 - 5x + 6 = 0$$

$$a=1, b=-5, c=6$$

$$b^2 - 4ac = 25 - 4(1)(6)$$

$$= 25 - 24 = 1$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{5 \pm 1}{2} = \begin{cases} 3 = x \\ 2 \end{cases}$$

$$(x-3)(x-2)$$

$$g(x) = -\sqrt{10-5x} + 7$$

①  $f(x) = \sqrt{x}$

②  $-\sqrt{x} = -f(x)$   $(x, -y)$

③  $-\sqrt{-5y}$   $(-\frac{1}{5}x, y)$

④  $-\sqrt{-5(x-2)}$   $(x+2, y)$

⑤  $-\sqrt{-5(x-2)} + 7$   $(x, y+7)$

$$\begin{aligned} &10 - 5x \\ &-5(-2+x) \\ &-\sqrt{-5(x-2)} + 7 \end{aligned}$$

$(2, 7)$

