

# Real Quiz 6.

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1. Galileo wrote "Discorsi" in 1638.
2. Descartes unified Algebra & Geometry with "Géométrie"
3. Newton discovered it but Leibniz published it.

$$4 \quad x^3 + 6x - 7 = 0$$

$$x = u + v$$

~~$$(u+v)^3 + 6(u+v) - 7 = 0$$~~

$$(u+v)^3 + 6(u+v) - 7 = 0$$

$$u^3 + 3u^2v + 3uv^2 + v^3 + 6(u+v) - 7 = 0$$

$$u^3 + v^3 + (3uv(u+v) + 6(u+v)) - 7 = 0$$

$$u^3 + v^3 + (3uv + 6)(u+v) - 7 = 0$$

$$\text{set } = 0, uv = -2$$

$$u^3 + v^3 = 7, uv = -2, u^3v^3 = -8$$

$$z^2 - 7z - 8 = 0$$

$$(z-8)(z+1) = 0$$

$$z = -1, 8$$

$$\sqrt[3]{z} = -1, 2$$

$$\text{roots: } 1, \left(-\frac{1}{2} + i\frac{\sqrt{3}}{2}\right) \cdot -1 + \left(-\frac{1}{2} - i\frac{\sqrt{3}}{2}\right) \cdot 2,$$

$$\left(-\frac{1}{2} - i\frac{\sqrt{3}}{2}\right) \cdot -1 + \left(-\frac{1}{2} + i\frac{\sqrt{3}}{2}\right) \cdot 2,$$

$$= 1, \frac{1}{2}(-1 - 3i\sqrt{3}), \frac{1}{2}(-1 + 3i\sqrt{3})$$