How do we find the mathematical rules behind our data? Many scientific fields have plots, curves and distributions that are not yet assigned an equation. We develop a framework to learn exact mathematical solutions from numerical output. This could help researchers solve problems without having to solve equations.

In the long-term, developing such methods could lead to fundamental discoveries about our natural world. Can we learn complicated rules of physics and chemistry by observation, and from this derive new theories?

We find an analogy between this method and the equations for neural networks that are already used today. This gives a new perspective on the meaning of network parameters in existing models and could lead to advances in understandable AI.