Every Polynomial Ideal is Finitely Generated

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Scientific Goals and Methods

$$\left(1 - t\left(\tfrac{1}{x} + \tfrac{1}{y} + xy\right)\right) f(t,x,y) = 1 - \tfrac{1}{y} t\, f(t,x,0)$$

$$\left(1 - t\left(\tfrac{1}{x} + \tfrac{1}{y} + xy\right)\right) f(t, x, y) = 1 - \tfrac{1}{y} t\, f(t, x, 0)$$

$$\left(1 - t\left(\tfrac{1}{x} + \tfrac{1}{y} + xy\right)\right) f(t, x, y) = 1 - \tfrac{1}{y} t\, f(t, x, 0)$$

$$\implies \qquad f(t, x, y) = \frac{2x^2 y t - x + t + \sqrt{(x - t)^2 - 4t^2 x^3}}{2x^2 y t \left(1 - t\left(\tfrac{1}{x} + \tfrac{1}{y} + xy\right)\right)}$$

$$\left(1 - t\left(\tfrac{1}{x} + \tfrac{1}{y} + xy\right)\right) f(t, x, y) = 1 - \tfrac{1}{y} t \, f(t, x, 0)$$

Kernel method
$$\overset{\text{Kernel method}}{\implies} \quad f(t, x, y) = \frac{2x^2 yt - x + t + \sqrt{(x - t)^2 - 4t^2 x^3}}{2x^2 yt \left(1 - t\left(\tfrac{1}{x} + \tfrac{1}{y} + xy\right)\right)}$$