A second degree polynomial passes through (0,2),(1,3) (2,7), (3,13). Find the polynomial.

we construct the difference table. for the given data is on bellow:

I more total

	2	7	47	027	434
	©	J = 70			
	1	3	- 2 = 440	$-2 = 4^2 y_0$	
7	1×20× 5	x 04 (10)	- godoni	2016 40	0 = 43/8
1	3	13	6	()	F. 63
100			•	1 1000	

we know, of the word interpolation formula,

$$y(x) = y_0 + u \cdot 4y_0 + \frac{u(u-1)}{2!} \cdot 4y_0 + \frac{u(u-1)(u-2)}{3!} \cdot 4y_0 = \frac{u(u-1)(u-2)}{3!} \cdot 4y_0 = \frac{u(u-1)(u-2)}{3!} \cdot 4y_0 = \frac{u(u-1)(u-2)}{3!} \cdot \frac{$$

$$y(x) = y_0 + u \cdot dy_0 + \frac{u(u-1)}{2!} \cdot dy_0 + \frac{u(u-1)(u-2)}{3!} \cdot dy_0 = 0$$

where $u = \frac{x-x_0}{h} = \frac{x-x_0}{2!} = x$ (x) $\frac{3!}{x_0} \cdot \frac{3!}{x_0} \cdot \frac{3!}{$

Now putting those values in equation (1)

$$y(x) = 1 + 2x + \frac{x(x-1)}{2}x^2 + \frac{x(x-1)(x-2)}{6}x^2 + \frac{x(x-1)($$

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

$$= 1 + x + x^2$$

$$\therefore y(x) = x^2 + x + 2$$

$$\therefore \text{ which is the paquined polynemial.}$$