$a^2 + b^2 = c^2 + d^2$

Den fulde løsning er parametriseret ved

$a = pr + qs$

$b = qr - ps$

$c = pr - qs$

$d = ps + qr$

Nogle opgaver og udvalgte parametriseringer fra min hånd.

1:

$x = a$

$y = a(2s + 1) - t(2s^2 + 2s + 1)$

$z = t(2s + 1) - a$

$w = a(2s + 1) - t(2s^2 + 2s)$

$(a, s, t) \in \mathbb{Z}^3$

2:

$a = pr + qs = 2m(n - us) + (2um + 1) \cdot s = 2mn + s$

$b = qr - ps = (2um + 1)(n - us) - 2ms$

$c = pr - qs = 2mn - 4mus - s$

$d = ps + qr = (2um + 1)(n - us) + 2ms$

i

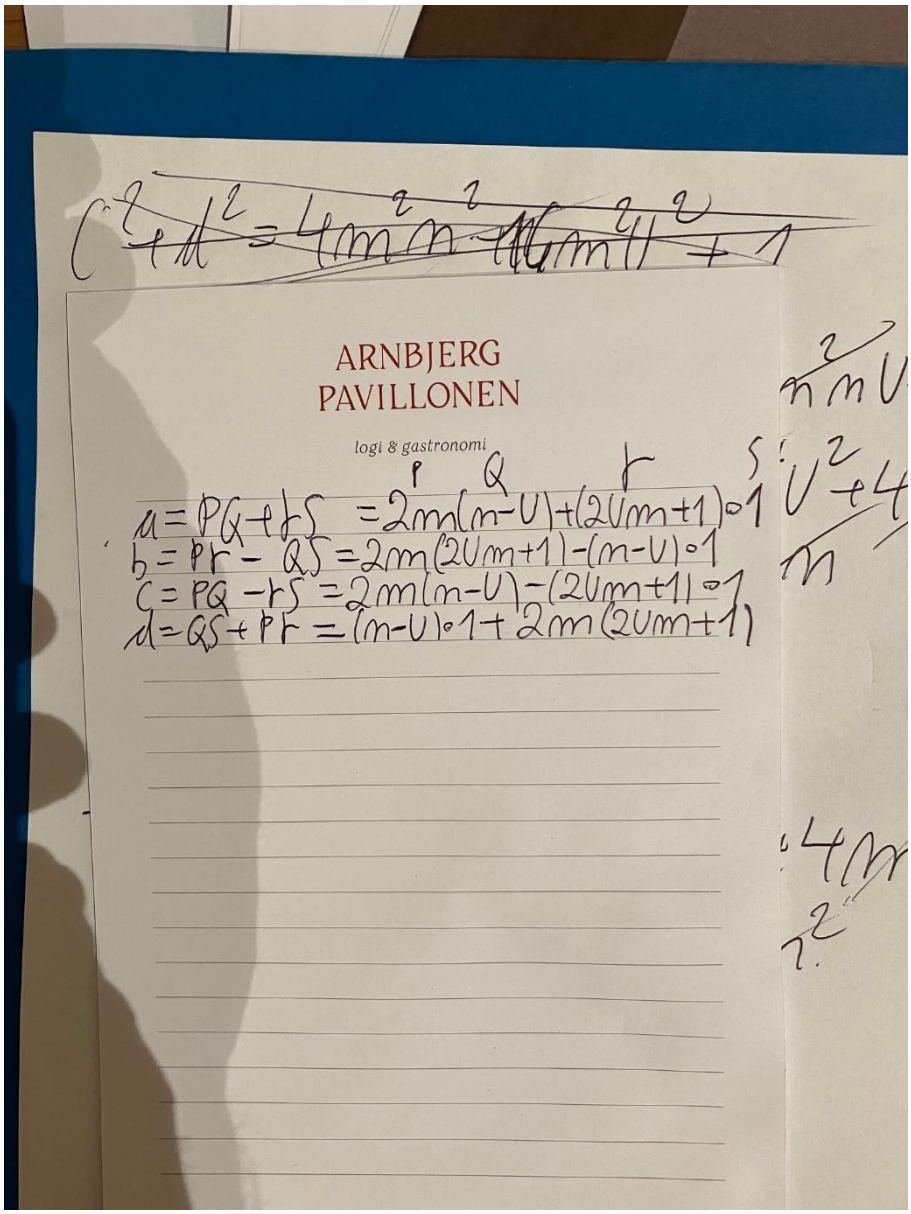
Elevopgave på 1. *g niveau.*

Vis uden hjælpemidler at nedenstående parametriseringer er løsninger

1: $(x, y, z, w) = (2r^2 - 1, 2r, 1, 2r^2), r \in \mathbb{Z}$

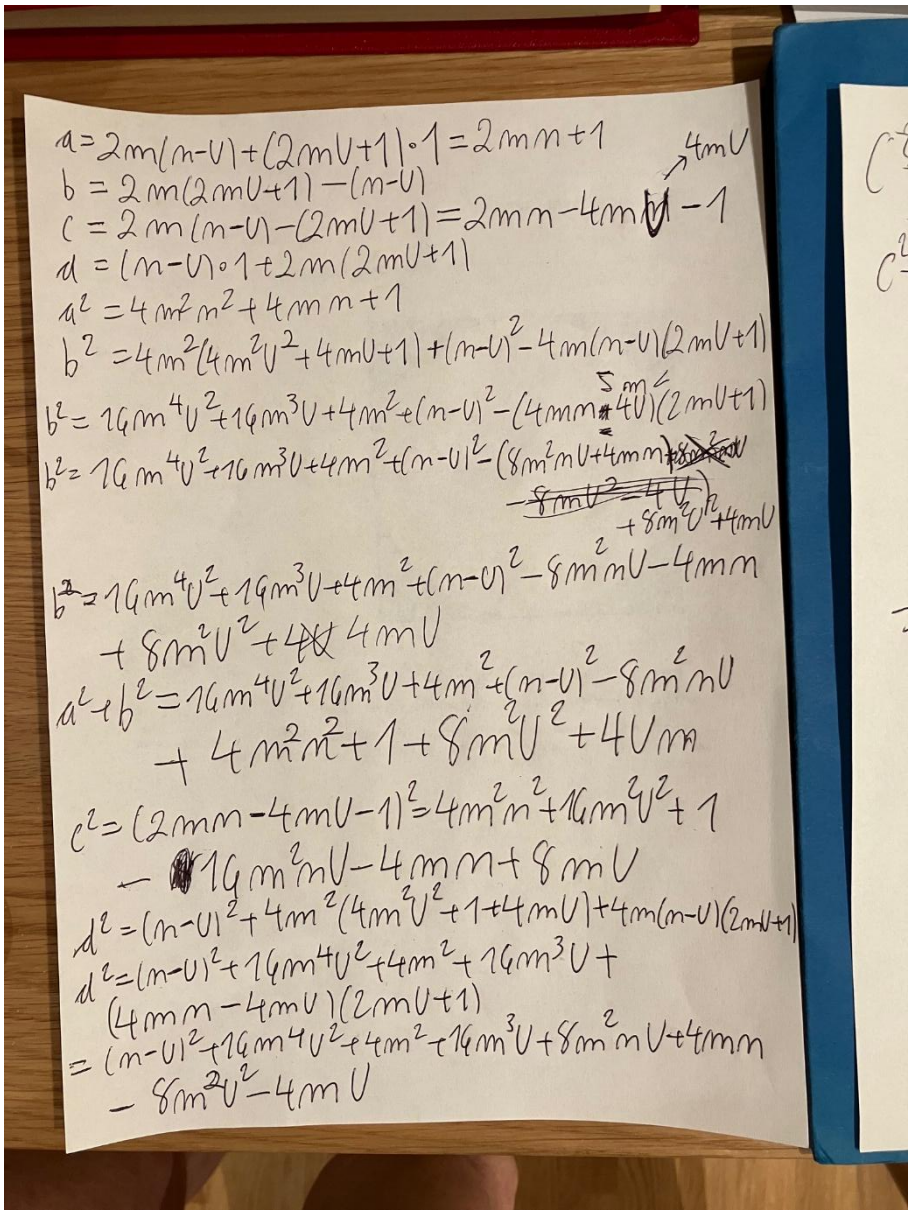
2: $(x, y, z, w) = \left(2r_1 r_2^2, r_1, 2r_1 r_2, r_1(2r_2^2 - 1)\right), (r_1, r_2) \in \mathbb{Z}^2$

Endnu en parametrisering på de næste håndskrevne sider



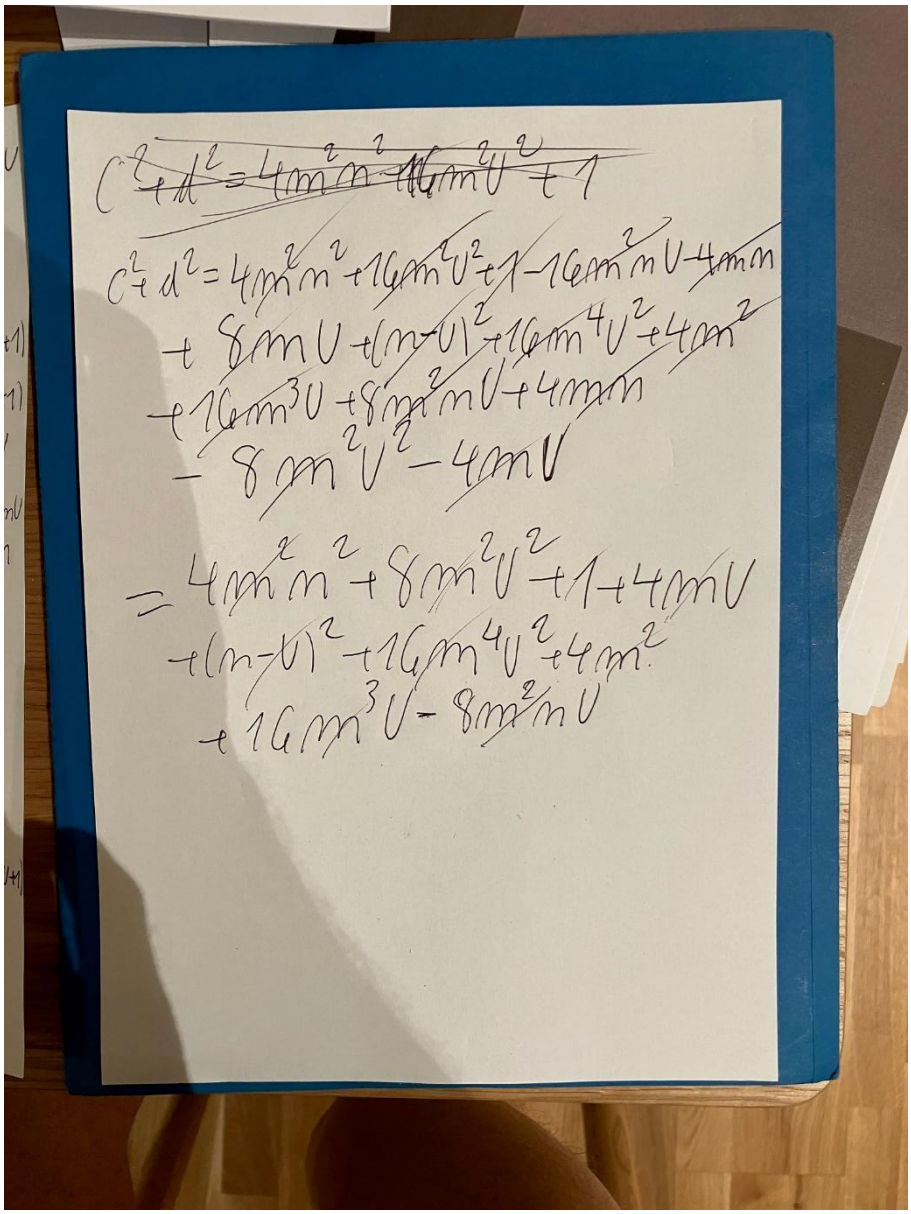
$a^2 + b^2 = c^2 + d^2$. *Nogle parametriseringer.*

Heine Strømdahl, 25-07-2026.



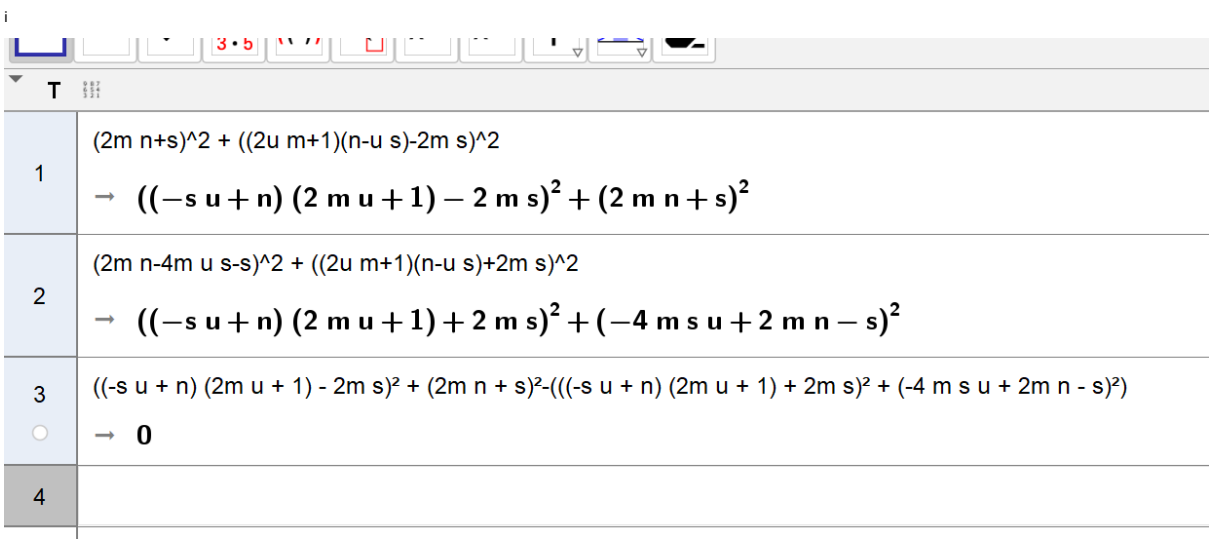
$a^2 + b^2 = c^2 + d^2$. *Nogle parametriseringer.*

Heine Strømdahl, 25-07-2026.



$a^2 + b^2 = c^2 + d^2$. *Nogle parametriseringer.*

Heine Strømdahl, 25-07-2026.



1	(2m n+s)^2 + ((2u m+1)(n-u s)-2m s)^2 → $((-s\,u+n)\,(2\,m\,u+1)-2\,m\,s)^2+(2\,m\,n+s)^2$
2	(2m n-4m u s-s)^2 + ((2u m+1)(n-u s)+2m s)^2 → $((-s\,u+n)\,(2\,m\,u+1)+2\,m\,s)^2+(-4\,m\,s\,u+2\,m\,n-s)^2$
3	((-s u + n) (2m u + 1) - 2m s)² + (2m n + s)²-(((-s u + n) (2m u + 1) + 2m s)² + (-4 m s u + 2m n - s)²) → **0**
4	

$a^2 + b^2 = c^2 + d^2$. *Nogle parametriseringer.*

Heine Strømdahl, 25-07-2026.