

1442

$$\begin{aligned}
 (a) \quad \left(\frac{p+1}{2}\right)^2 - \left(\frac{p-1}{2}\right)^2 &= \frac{(p+1)^2}{2^2} - \frac{(p-1)^2}{2^2} \\
 &= \frac{p^2 + 2p + 1 - (p^2 - 2p + 1)}{4} \\
 &= \frac{p^2 + 2p + 1 - p^2 + 2p - 1}{4} = \frac{4p}{4} = p \quad (\underline{\underline{\text{Svar}}})
 \end{aligned}$$

$$(b) \quad (2t)^2 + (k - 2t^2)^2 - (k - 2t^2 - 1)^2$$

Utveckla de tre termerna var för sig:

$$\circ (2t)^2 = 4t^2$$

$$\circ (k - 2t^2)^2 = k^2 - 2 \cdot k \cdot 2t^2 + (2t^2)^2 = k^2 - 4kt^2 + 4t^4$$

$$\circ (k - 2t^2 - 1)^2 = (k - 2t^2 - 1)(k - 2t^2 - 1)$$

$$\begin{aligned}
 &= k \cdot k - k \cdot 2t^2 - k \cdot 1 - 2t^2 \cdot k + 2t^2 \cdot 2t^2 + 2t^2 \cdot 1 - 1 \cdot k + 1 \cdot 2t^2 + 1 \cdot 1 \\
 &= k^2 - 2kt^2 - k - 2kt^2 + 4t^4 + 2t^2 - k + 2t^2 + 1 \\
 &= k^2 - 2k - 4kt^2 + 4t^2 + 4t^4 + 1
 \end{aligned}$$

Då får vi

$$\begin{aligned}
 &(2t)^2 + (k - 2t^2)^2 - (k - 2t^2 - 1)^2 \\
 &= 4t^2 + k^2 - 4kt^2 + 4t^4 - (k^2 - 2k - 4kt^2 + 4t^2 + 4t^4 + 1) \\
 &= 4t^2 + k^2 - 4kt^2 + 4t^4 - k^2 + 2k + 4kt^2 - 4t^2 - 4t^4 - 1 \\
 &= 2k - 1 \quad (\underline{\underline{\text{Svar}}})
 \end{aligned}$$