

1 (vi) using identity $(a-b)^2 = a^2 - 2ab + b^2$

$$\begin{aligned}
 & 46^2 \\
 &= (50-4)^2 \\
 &= 50^2 - 2 \times 50 \times 4 + 4^2 \\
 &= 2500 - 400 + 16 \\
 &= 2516 - 400 \\
 &= 2116
 \end{aligned}$$

2 (i) (a) let $2m = 6$

$$\begin{aligned}
 \Rightarrow m &= \frac{6}{2} \\
 &= 3
 \end{aligned}$$

$$\begin{array}{l|l}
 m^2 - 1 = 3^2 - 1 & m^2 + 1 = 3^2 + 1 \\
 = 8 & = 10
 \end{array}$$

\therefore Pythagorean triplet 6, 8, 10

$$\begin{aligned}
 \text{taking } m^2 - 1 &= 6 \\
 \Rightarrow m^2 &= 7
 \end{aligned}$$

$$\begin{aligned}
 \text{taking } m^2 + 1 &= 6 \\
 \Rightarrow m^2 &= 5
 \end{aligned}$$

$m^2 - 1, m^2 + 1$ do not give integral values of m

\therefore required Pythagorean triplet 6, 8, 10