EXERCISE 31.4 PAGE NO: 31.16

1. Write the negation of each of the following statements:
(i) For every x ∈ N, x + 3 < 10
(ii) There exists x ∈ N, x + 3 = 10
Solution:
(i) For every x ∈ N, x + 3 < 10
The negation of the statement is
"There exist x ∈ N, such that x + 3 ≥ 10."

(ii) There exists x ∈ N, x + 3 = 10
The negation of the statement is
"There exist x ∈ N, such that x + 3 ≠ 10."

2. Negate each of the following statements:
(i) All the students complete their homework.
(ii) There exists a number which is equal to its square.
Solution:
(i) All the students complete their homework.
The negation of the statement is
"Some of the students did not complete their homework."

(ii) There exists a number which is equal to its square.
The negation of the statement is
"For every real number x, $x^2 \neq x$."