Find the time complexity of the below functions in Θ form.

Write NA if the function does not apply to any case.

a) T (n) = 3T (n/2) + n

b) T (n) = 64T (n/8) − n^2(log n)

c) T (n) = 2nT (n/2) + n^n

d) T (n) = 3T (n/3) + n/2

e) T (n) = 7T (n/3) + n^2

Solution :-

According to the master theorem – T(n) = aT (n/b) + f(n)

1. T(n) = 3T (n/2) + n

T(n) = Θ (n^log3)

1. T (n) = 64T (n/8) – n^2 (log n)

There is no case related to minus value,

Hence it is N/A.

1. T (n) = 2nT (n/2) + n^n

N/A

1. T (n) = 3T (n/3) + n/2

T(n) = Θ (n log n )

1. T (n) = 7T (n/3) + n^2

T(n) = Θ (n^2)