```
options = optimoptions('fmincon', "Display","iter","Algorithm","sqp");
fun = @(x)(x(1) - 10)^3 + (x(2) - 20)^3;
lb = [13, 0];
ub = [20, 4];
A = [];
b = [];
Aeq = [];
beq = [];
```

generate random number and load non linear constraint

```
x0 = randn(2,1,"double")
```

```
x0 = 2×1
    0.5377
    1.8339
```

```
nonlcon = @conQ1;
```

solve the equation

```
[x, fval] = fmincon(fun, x0, A, b, Aeq, beq, lb, ub, nonlcon, options)
```

```
Your initial point x0 is not between bounds lb and ub; FMINCON
shifted x0 to satisfy the bounds.
 Iter  Func-count            Fval    Feasibility   Step Length        Norm of    First-order
                                                                         step     optimality
     0           3    -5.967958e+03     2.598e+01     1.000e+00      0.000e+00      9.900e+02
     1           6    -7.347858e+03     2.982e+00     1.000e+00      1.727e+00      3.642e+02
     2           9    -6.976330e+03     1.097e-01     1.000e+00      3.312e-01      4.246e+01
     3          12    -6.961837e+03     1.730e-04     1.000e+00      1.315e-02      7.153e-02
     4          15    -6.961814e+03     4.333e-10     1.000e+00      2.082e-05      5.179e-04

Local minimum found that satisfies the constraints.

Optimization completed because the objective function is non-decreasing in
feasible directions, to within the value of the optimality tolerance,
and constraints are satisfied to within the value of the constraint tolerance.

<stopping criteria details>
x = 2×1
   14.0950
    0.8430
fval = -6.9618e+03
```

```
conQ1(x)
```

```
ans = 1×2
10⁻⁹ ×
   -0.4184    0.4333
```