

MLAssignment

December 8, 2022

```
[7]: def projected_gradient_descent(x, P, q, r, alpha=0.05):
      for _ in range(100):
          x -= alpha*(P@x + q)

          for i in range(len(x)):
              if x[i] < -1:
                  x[i]=-1
              elif x[i]>1:
                  x[i]=1

          print ('X for min value:', x)
          print('Min function Value:', x.T@P@x + q.T@x + r)

      P = np.array([
          [13,12,-2],
          [12,17,6],
          [-2,6,12]])
      q = np.array([[ -22], [-14.5], [13]])
      r = 1
      x = np.random.random(3).reshape(3,1)

      projected_gradient_descent(x, P, q, r)
```

X for min value: [[1.]

[0.5]

[-1.]]

Min function Value: [[-2.]]