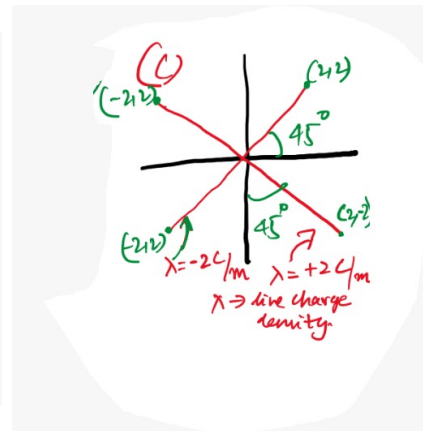
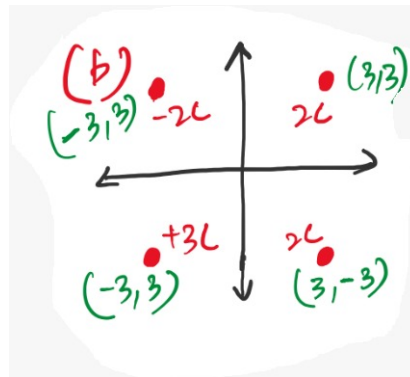
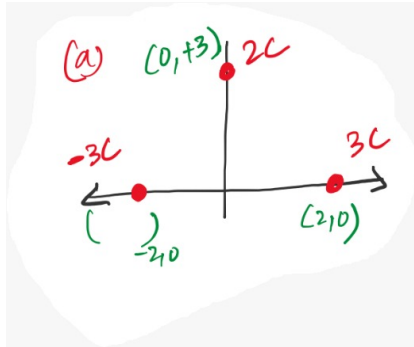


EM ASSIGNMENT  
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Q2: Consider the charge configuration :-



2.1) PLOT for all charge configuration for  $(\pm 6, \pm 6)$

a) E

**Solution:** a) source code:

Listing 1: Example MATLAB code

```

1 %constants
2 k = 9 * 10^9;
3
4 %charges
5 q1 = 2;
6 q2 = -3;
7 q3 = 3;
8
9 %creating grid
10 [x, y] = meshgrid(-6:0.5:6, -6:0.5:6);
11
12 %value of x and y component of Electric Field
13 Ex = k * q1 * x ./ (x.^2 + (y - 3).^2).^(3/2) + ...
14     k * q2 * (x + 2) ./ ((x + 2).^2 + y.^2).^(3/2) + ...
15     k * q3 * (x - 2) ./ ((x - 2).^2 + y.^2).^(3/2);
16
17 Ey = k * q1 * (y - 3) ./ (x.^2 + (y - 3).^2).^(3/2) + ...
18     k * q2 * y ./ ((x + 2).^2 + y.^2).^(3/2) + ...
19     k * q3 * y ./ ((x - 2).^2 + y.^2).^(3/2);
20
21 %plotting
22 figure;
23 quiver(x, y, Ex, Ey, 'Color', 'r');
24 xlabel('x');
25 ylabel('y');
26 title('Electric_Field');
```

b) V

c) U (Electrostatic Energy)