**Solution Set: College Physics II – Electrostatic Forces & Fields, Electric Potential**

**1. Coulomb’s Law**

Given:

a) Magnitude of force:

b) **Direction:**  
Since the charges are opposite, the force is **attractive**. Each charge pulls the other toward itself.

**2. Electric Field of a Point Charge**

Given:

**Direction:**  
Radially outward from the charge (since it is positive).

**3. Electric Field from Multiple Charges**

Given:  
Distance between them:   
Midpoint is from each.

a) Electric field at midpoint:

* Field due to (to the right):

(Direction: away from , so to the right)

* Field due to (to the left, since it’s negative):

(Direction: toward , so to the left)

* Net field at midpoint (left is negative, right is positive):

So, **224,750 N/C to the left**.

b) Force on test charge:

Direction: **to the left**.

**4. Electric Potential (Point Charges)**

Given:

**5. Potential Difference and Work**

Given:  
Electron charge:

a)

b)  
Work done by the field:

(The work is **positive**, so the field does positive work as the electron moves from higher to lower potential.)