



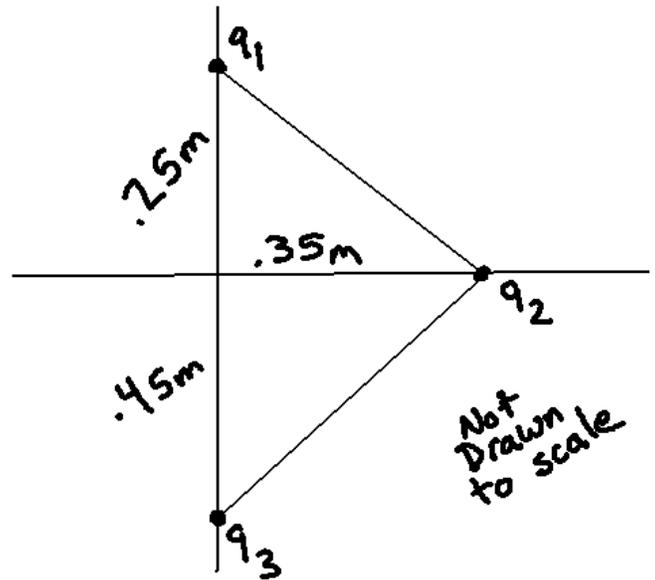
## Chapter 17 Review

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1. Make sure your equation sheet is up to date.
2. Like charges (attract/repel). A positive and negative charge (attract/repel).
3. What is the charge inside a Van de Graaff generator?
4.  $e$  is the charge of what kind of particle? What is it equal to?
5. Electric Force is a (field force / contact force)
6. Draw the field lines between two charges:  $+3q$  and  $-q$
  
7. Draw the field lines between two charges:  $+2q$  and  $+4q$
  
  
  
  
  
  
  
  
  
  
8. A Helium nucleus (2 protons, 2 neutrons) is a distance of  $2.5 \times 10^{-13}$  m from an Iron nucleus (26 protons). What is the electric force acting on the iron nucleus by the helium (give direction as well). (answer: 0.19)

9. Find the electric field generated by a Helium nucleus at a distance of 20.1 cm from the nucleus. ( $7.12 \times 10^{-8}$ )

10. Given the diagram on the right, calculate the magnitude and direction of the *net* electric force on point charge  $q_2$ . We know that  $q_1$  exerts an electrical force on  $q_2$  with a magnitude of .35 N and  $q_3$  has a force of .75 N on  $q_2$ . Assume charges are positive. (.84 and angle too)



11. Draw a diagram showing electric field lines between 3 point charges of magnitudes  $+3.0 e$ ,  $-6.0 e$ , and  $+9.0e$  (need a minimum of three lines per point charge)
12. Let's say our Van de Graaf Generator can build up a charge of  $5.0 \times 10^{-5}$ . If the radius of the dome is 10.0 cm, what would the electric field strength be at
- 5.0 cm from the center of the dome
  - at the surface of the dome ( $4.5 \times 10^7$ )
13. If an electron comes within 20.0 cm of our Van de Graaff generator ( $5.0 \times 10^{-5}$  C),
- What is the magnitude of the force exerted on the electron? ( $1.8 \times 10^{-12}$ )
  - What direction would the electron be pushed/pulled?
14. The ion of sulfur, sulfide, has a charge of -2. What is the electric field strength 25 mm away from this ion? ( $4.6 \times 10^{-6}$ ) Give direction too (away or towards ion)
15. If the average ionic radius of iron is  $.645 \times 10^{-10}$  m, what is the magnitude of electric force from the nucleus on one of iron's electrons at this distance? ( $1.44 \times 10^{-6}$ )