

Problems for chapter 16

1, 2, 5, 6, 9, 13, 15, 16, 19, 23, 25, 26, 28, 31, 32, 35, 37, 39, 41, 48, 52, 56, 57, 59, 60, 62, 64, 67, 71

Answers to even-numbered problems:

Chapter 16

2. 1.87×10^{14} electrons
4. 9.2 N
6. 2.0 N
8. 2.62×10^{14} electrons, 2.4×10^{-16} kg
10. 2.3×10^{39}
12. 147.2 N left, 563.5 N right, 416.3 N left
14. 6.19×10^7 N @ 45 degree up, right
16. $10.1 \text{ kQ}^2/\text{l}^2$ @ 61 degrees, $14.8 \text{ kQ}^2/\text{l}^2$ @ 332 degrees
18. both positive, 5.54×10^{-4} C, 5.54×10^{-6} C
20. 116 cm
22. 1.0×10^{12} electrons
24. 234 kN/C, south
26. 7.42 MN/C up
28. 8.4×10^7 N/C toward negative charge
30. 0.102 N/C
32. 2.65×10^{-10} C
34. 3.87×10^4 N/C at 45 degrees
36. 29 cm
38. 4.5 MN/C 90 degrees, 12 MN/C @ 56 degrees
- 40.
42. Right, 640 N/C
44. $59 \text{ N}\cdot\text{m}^2/\text{C}$, $42 \text{ N}\cdot\text{m}^2/\text{C}$, $0 \text{ N}\cdot\text{m}^2/\text{C}$
- 46.
48. 3.75×10^{-11} C, negative
- 50.
52. 5.08 m
54. 1.02×10^{-7} N/C up
56. $2.64 \times 10^{13} \text{ m/s}^2$ up, $1.4 \times 10^{10} \text{ m/s}^2$ down
58. 2.45×10^{-10} N
60. 5.71×10^{13} C
62. 1.6 m from Q_2 and 2.6 m from Q_1
64. 6.06×10^{-6} C
66. 0.45 N right
68. 1.06×10^7 N/C
- 70.
72. QEL