# Electromagnetism Review

#### John Mastroberti

### July 27, 2021

## Contents

1	Magnetostatics	1
	1.1 Basics:	2
2	Plasmas	2
3	Radiation	2
4	Addition Theorem	2
5	${\bf Electromagnetic\ Energy/Momentum\ Density}$	2
6	Electromagnetic Waves	2
7	Multipole Expansion	2
8	Dielectrics	2
9	Surface Charge Density $<->$ Electric Potential	2
10	Problems completed [6/24]: $\rm jm$	2

## 1 Magnetostatics

#### 1.1 Basics:

$$d = \frac{\mu_0}{4\pi} \frac{Id\ell \times}{x^3}$$

$$\oint \cdot \ell = \mu_0 I_{enc}$$

- 2 Plasmas
- 3 Radiation
- 4 Addition Theorem
- 5 Electromagnetic Energy/Momentum Density
- 6 Electromagnetic Waves
- 7 Multipole Expansion
- 8 Dielectrics
- 9 Surface Charge Density <-> Electric Potential
- 10 Problems completed [6/24]:

2018

- $\Box$  4
- $\Box$  5
- $\square$  9
- $\Box$  10

2017

- $\boxtimes$  4
- $\boxtimes$  5

- $\square$  9
- $\Box$  10
- 2016
  - $\boxtimes$  4
  - $\boxtimes$  5
  - $\exists 9$
  - $\Box$  10
- 2015
  - $\Box$  4
  - $\boxtimes$  5
  - $\square$  9
  - $\Box$  10
- 2014
  - $\Box$  4
  - $\boxtimes$  5
  - $\square$  9
  - $\Box$  10
- 2013
  - $\Box$  4
  - $\Box$  5
  - $\square$  9
  - $\Box$  10