

AP[®] Physics C: Electricity and Magnetism
Summer Assignment
Highland School



To all prospective AP Physics students;
Listed below, in order of importance, are the tasks that you must do before classes start this fall.

Sign up for Remind.com from an address that you will use throughout the upcoming school year. Instructions are on the following pages. I will communicate to you important class information, such as assignment updates, lab reminders, absent-teacher plans, test reminders, and last-minute agenda changes.

Join the AP Physics Google Classroom. The code is **x7jap6** .

Sign up for MasteringPhysics. The course ID for AP Physics C: Electricity and Magnetism is **HAWKPHYSICSAP2019**. Instructions are on the following pages. Once you have joined the Course, complete the first assignment, which is an introduction to using MasteringPhysics. It is due Friday, August 30 at 11:59 pm. No extensions will be given.

Purchase the review book (used is fine, even encouraged), you will use it extensively [about \$15]: "Cracking the AP Physics C Exam, 2019 Edition: Practice Tests & Proven Techniques to Help You Score a 5" by The Princeton Review Staff.

Tip: once you have it, read "Chapter 4: Content Review for the AP Physics C Exam - Vectors" and identify ONE question for which the *answer* was not clear to you, then ask me during the first week of classes.

Summer Calculus Practice. If you have already taken Calculus, complete the attached Summer Calculus Practice problems. If you have not taken Calculus yet, you should be enrolled in Dr. Corcoran's Summer Bridge course.

**** Do not wait until the week before Labor Day weekend to start this assignment, for you might have other school work to do! ****



Sign up for important updates from Mrs. Kennedy.

Get information for **Highland School** right on your phone—not on handouts.

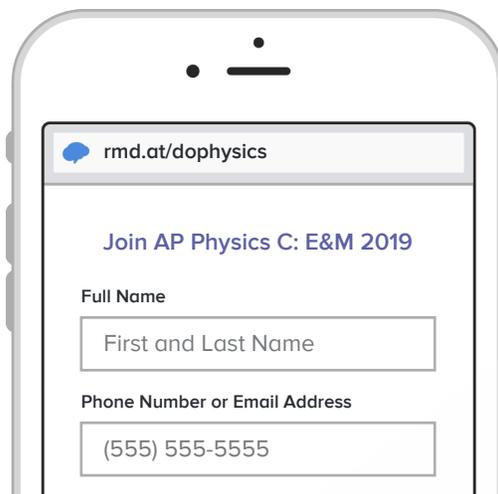
Pick a way to receive messages for **AP Physics C: E&M 2019**:

A If you have a smartphone, get push notifications.

On your iPhone or Android phone, open your web browser and go to the following link:

rmd.at/dophysics

Follow the instructions to sign up for Remind. You'll be prompted to download the mobile app.



B If you don't have a smartphone, get text notifications.

Text the message **@dophysics** to the number **81010**.

If you're having trouble with **81010**, try texting **@dophysics** to **(540) 645-6258**.

** Standard text message rates apply.*



Don't have a mobile phone? Go to rmd.at/dophysics on a desktop computer to sign up for email notifications.



Get Started with Pearson's Mastering Physics

First, make sure you have these 3 things...

1. **Email:** You'll get some important emails from your instructor at this address.
2. **Course ID:** Ask your instructor for your Course ID!
3. **Access code or credit card:** An access code card may be packaged with your new book or may be sold by itself at your bookstore. Otherwise, you can buy instant access with a credit card or PayPal account during registration.



Next, get registered and join your course!

1. Go to [Pearson Mastering Physics webpage](#).
2. Under **Register Now**, select **Student**.
3. Confirm you have the information needed, then select **OK! Register now**.
4. Enter your instructor's **Course ID** (ex. MAPprofessor12345), and choose **Continue**.
5. Enter your existing Pearson account **username** and **password** and select **Sign in**. You have an account if you've ever used a Pearson MyLab & Mastering product, such as MyLab Math, MyLab IT, or Mastering Chemistry.
 - If you don't have an account, select **Create** and complete the required fields.
6. Select an access option.
 - Enter the access code that came with your textbook or was purchased separately from the bookstore.
 - Buy access using a credit card or PayPal account.
7. From the "You're Done!" page, select **Go to My Courses**.
8. Select **Yes** and enter your **Course ID** to join your course. Click **Continue**.
9. If asked, enter your **Student ID** according to the instructions provided and click **Continue**. That's it! You should see the course home page for the course.

To sign in later:

1. Go to [Pearson Mastering Physics webpage](#) and select **Sign In**.
2. Enter your Pearson account **username** and **password** from registration, and select **Sign In**.
 - If you forgot your username or password, select **Forgot your username or password?**

To join another course for the same textbook (no additional purchase needed):

1. Sign in with the **username** and **password** that you specified during registration.
2. Select **My Courses** in the upper left and then choose **Join a Course**.
3. Enter the **Course ID** from your instructor and click **Continue**.
4. If asked, enter your **Student ID** according to the instructions provided and click **Continue**.
5. To switch courses, select **My Courses** from the course menu (left side).
6. Select any active course link that appears below **Switch to another course**.
7. The next time you sign in to Mastering, your course view will match the last course you chose.

If you have a technical issue: Contact [Pearson Support](#).

SUMMER CALCULUS PRACTICE

Use what you know from your past calculus experiences, or what you have learned this summer from Dr. Corcoran's crash course, to complete the following problems. Then check your answers with the key posted on the AP Physics C Google Classroom page.

POWER RULE DERIVATIVES

For each of the following functions, find the derivative (dy/dx) with respect to x :

1. $y = 5x^2$

2. $y = 4x$

3. $y = 8x^3$

4. $y = 2$

5. $y = 2x^{-1}$

6. $y = 4x^3 + 2x - 1$

OTHER COMMON DERIVATIVES

For each of the following functions, find the derivative (dy/dx) with respect to x :

7. $y = \cos x$

8. $y = e^x$

9. $y = \ln x$

CHAIN RULE DERIVATIVES

Use the chain rule to help you find dy/dx for each of the following functions:

10. $y = (x^2 + 4)^3$

11. $y = e^{3x}$

12. $y = \sin(3x+1)$

PRODUCT RULE DERIVATIVES

Use the product rule to help you find dy/dx for each of the following functions:

13. $y = (x^2)(2x - 7)$

14. $y = 2x^3e^x$

15. $y = (5x^2 + 3x)(\ln x)$

MAXIMUM AND MINIMUM VALUES

Find the maximum y-coordinate reached by the following functions:

16. $y = -3x^2 + 12x$

17. $y = -2x^2 - 20x + 12$

INDEFINITE INTEGRALS

Use the idea of "un-doing a derivative" to find the following indefinite integrals:

18. $\int 3x^2 dx$

19. $\int (8x^3 + 2x) dx$

20. $\int (5x^3 - 1) dx$

DEFINITE INTEGRALS

Evaluate each of the following definite integrals:

21. $\int_0^2 (6x^2 + 3) dx$

22. $\int_1^5 (4x + 1) dx$

CALCULUS AND GRAPHS

Use calculus ideas to find the required graphical values of the following functions:

23. Find the instantaneous slope of the function $y = x^2 + 3x - 5$ at the point (2, 5).

24. For the same function used in the previous problem, find the area under the curve between $x=0$ and $x=2$. Sketch a graphical representation of the problem on a separate sheet of graph paper.