

AP Calculus (BC)

Differential Equations

The list below contains the *learning targets* for the unit on differential equations. Before the unit test, you should be able to place a check next to each statement as being true.

- I can find the general and particular solutions to a differential equation using
 - antidifferentiation
 - separation of variables
- I can generate a slope field given a differential equation.
- I can use a slope field to approximate solutions to a differential equation.
- I can use Euler's method to approximate solutions to a differential equation.
- I can model exponential growth and decay as $dy/dt = ky$.
- I can model logistic growth as $dy/dt = ky(M - y)$.

Textbook Assignments

The exercises below are from *Calculus: Graphical, Numerical, Algebraic* by Finney, Demana, Waits, and Kennedy. These specific problems are the bare minimum that should be completed after each lesson, but you are encouraged to attempt more if needed.

- 6.1 Slope Fields **pg 312: 27-30, 43, 44, 63**
- 6.1 Differential Equations **pg 312: 50, 51, 53, 55, 57, 62**
- 6.3 Differential Equations **pg 328: 19-22**
- 6.2 Separation of Variables **pg 321: 39-44**
- 6.4 Exponential Growth and Decay **pg 338: 11, 13, 15, 19, 21, 25**
- 6.4 Exponential Growth and Decay **pg 338: 27, 28, 29, 35, 36, 38**
- 6.5 Logistic Growth **pg 347: 1, 3, 5, 7, 9-12, 17**
- 6.6 Euler's Method **pg 355: 1, 3, 9, 11, 13, 16, 23**

Assignments are subject to change in class.