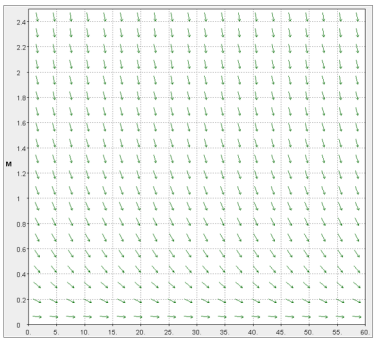
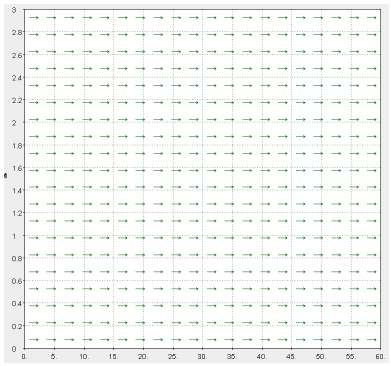
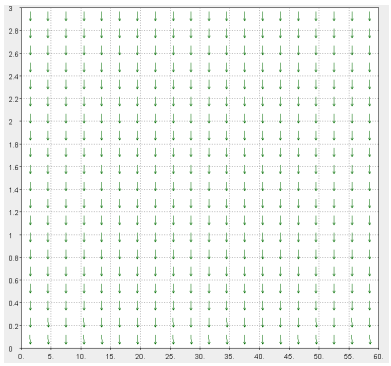
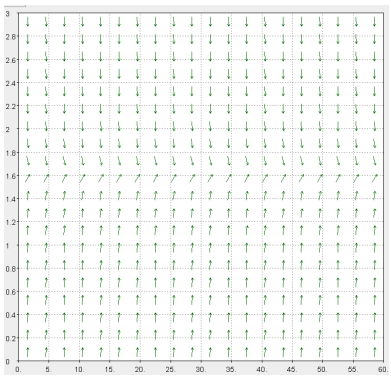
Week 01 For 316

Weekly Quiz

1. What is the name of the scanner that is used in the HIDA scan?
   (a) Gamma Camera $\implies$ **Correct**
   (b) HIDA Scanner
   (c) Radioactive Tracer
2. What is the name of the isotope used in the HIDA scan?
   (a) Radioactive Dye
   (b) Technetium-99 $\implies$ **Correct**
   (c) Technetium-97
   (d) Iridium
3. What is the half-life of this isotope?
   (a) 6 minutes
   (b) 1 hour
   (c) 6 hours $\implies$ **Correct**
   (d) 1 day
4. What is a slope field?
   (a) A field that is full of multiple inclines.
   (b) A solution to a differential equation.
   (c) A visual representation of the slopes at various coordinates. $\implies$ **Correct**
5. How can we tell what curve in a slope field represents a specific solution to a differential equation?
   (a) We just pick one
   (b) The given initial conditions/coordinates of a point the solution passes through. $\implies$ **Correct**
   (c) It is where the vectors of the slope field converges.
6. The HIDA Scan slope field is best represented by:
   (a)  $\implies$ **Correct**

(b) 

(c) 

(d) 

7. Solve the Initial Value Differential Equation:

$$\frac{dM}{dt} = -kM; \;\; M(0) = 2.$$

   (a) $M(t) = 3e^{-kt}$
   (b) $M(t) = e^{-kt}$
   (c) $M(t) = 2e^{-kt} \implies$ **Correct**
   (d) $M(t) = e^{-kM}$

8. Solve the Differential Equation:

$$x\frac{dy}{dx} = \frac{1}{y^3}$$

   (a) $y = \sqrt{4\ln(x) + C}$
   (b) $y = \sqrt[4]{4\ln(x) + C} \implies$ **Correct**
   (c) $y = \sqrt[4]{4\ln(x)}$
   (d) $y = \sqrt{2\ln(x)}$

9. Explain the 3-step process to solving differential equations. (This is an essay question.)

10. Solve the following differential equation: $\frac{dy}{dt} = \frac{-2ty}{t^2}$. Please upload a picture or write up your process. (essay question)