

Answer Template for Lab 4: Custom pplane9 software

ENGR 232 – Dynamic Engineering Systems

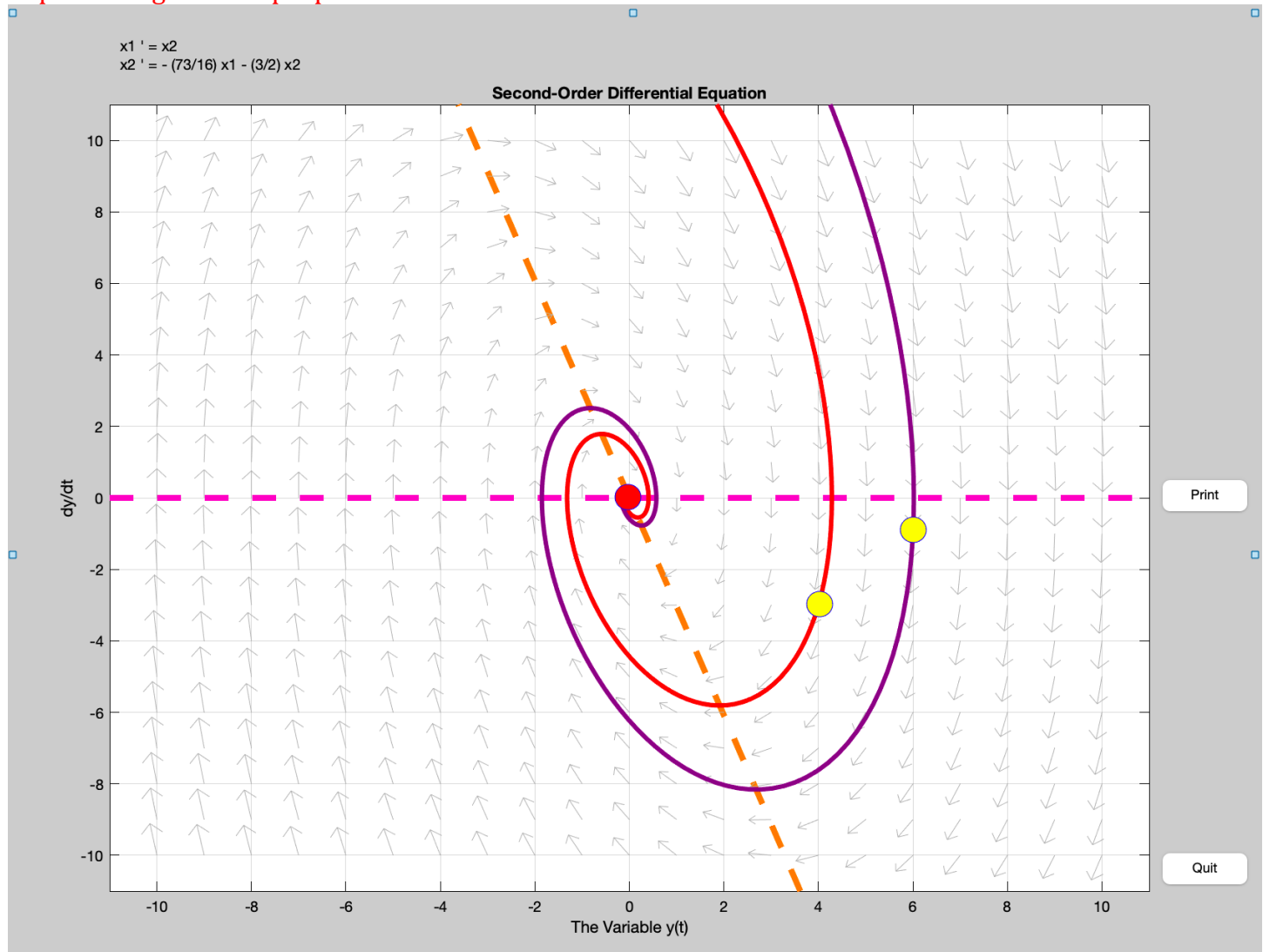
Name: Cole Bardin

Section: 61

First

Last

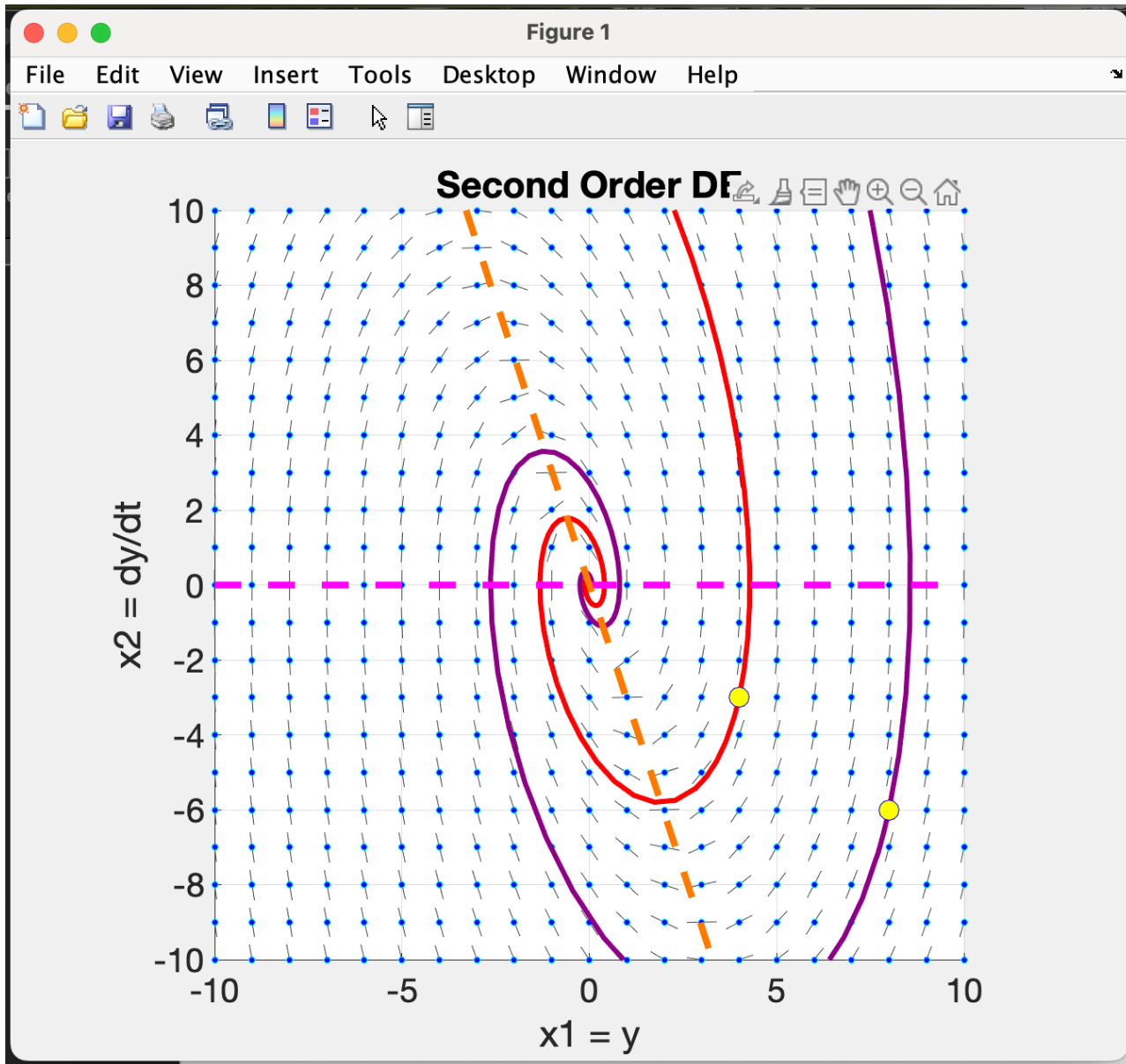
Questions 1-2: **Paste your completed phase plot here that you found using pplane8.** (2 points)
Replace the given sample plot.

**Grader:**

i. One point if the curves are correct.

ii. One point if the colors are correct.

Replace the sample image with your completed graph.



Grader will award **four** points as follows.

i. The tickmarks all have the same length.

ii. Solution for $(4, -3)$ is in **red**.

Solution for $(8, -6)$ is in **deep_purple**.

iii. Solutions backwards in time are included.

iv. Nullclines are correct.

Question 7: The exact solution for **DE: $16y'' + 24y' + 73y = 0$** satisfying $\vec{x}(0) = \begin{bmatrix} 4 \\ -3 \end{bmatrix}$ is:

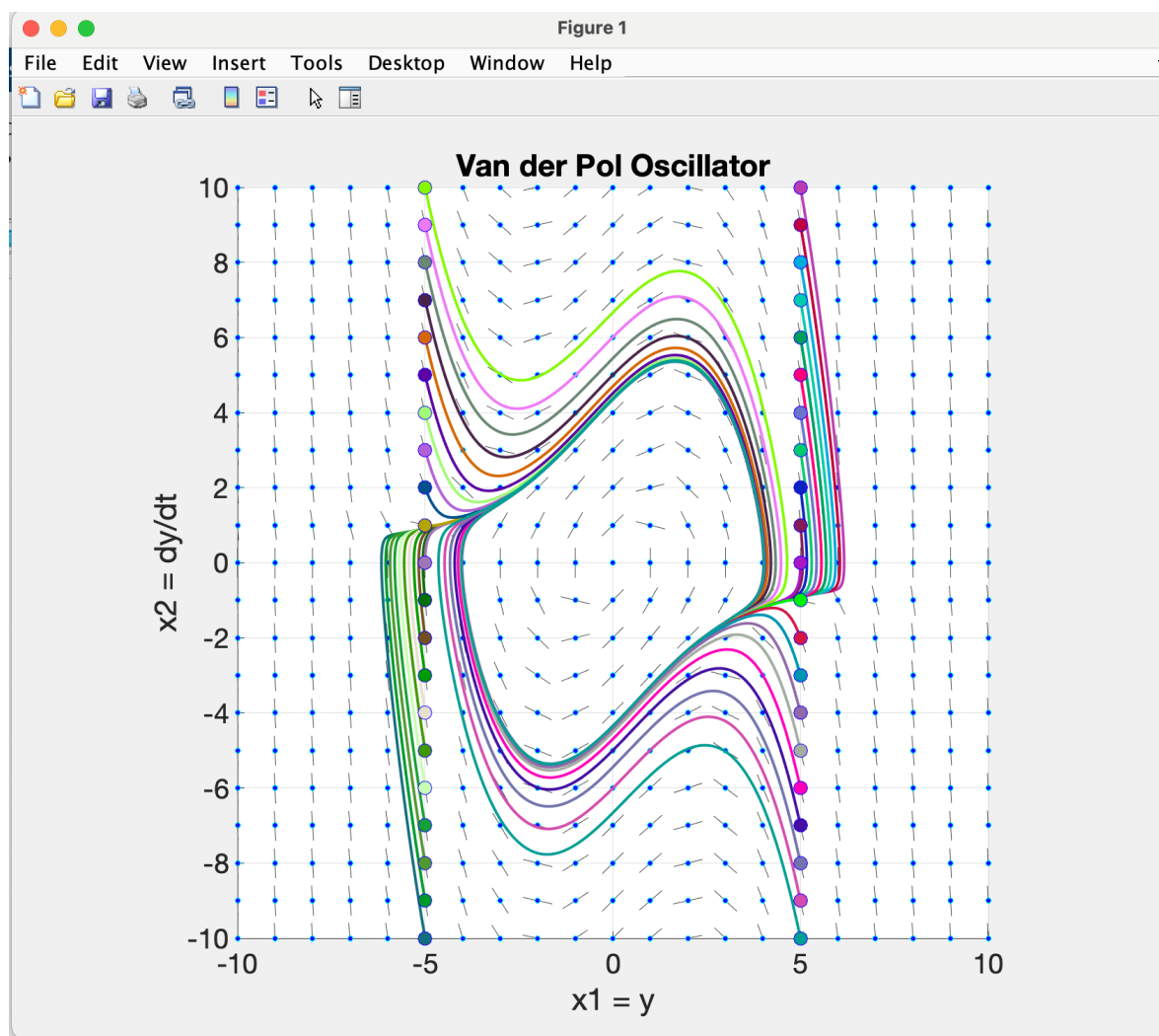
$$y(t) = 4 * \cos(2t) * e^{-\frac{3}{4}t}$$

(1 point)

Questions 8-10: Van der Pol Oscillator

(3 points)

Questions 8-9-10: Replace the sample plot with your completed solution curves for the Van der Pol Oscillator.



Grader:

- One point for the direction field and title.
- One point if there are 42 curves, 21 at -5 and 21 at $+5$.
- One point if snap-to-grid is working and all the initial points are perfectly, equally spaced vertically.

Ready to Submit?

Be sure all ten questions are answered. When your lab is complete, be sure to submit three files:

1. Your **completed Answer Template** as a PDF file
2. A copy of your **MATLAB Live Script**
3. A **PDF** copy of your **MATLAB Live Script** (Save-Export to PDF...)

The due date is the day after your lab section by **11:59pm** to receive full credit. You have one more day, to submit the lab (but with a small penalty), and then the window closes for good and your grade will be zero.