

[Submitting HW Tips](#)

HW #1

- 1** **Section 1.1:** #2, 3, 12, 16, 18, **25** ← Use **dfield** for this one.
- 2** **Section 1.2:** #1(c), 2(c), 7, 8, 9(a).
- 3** **Section 1.3:** #1, 2, 3, 4, 5, 10, 13, 15.
- 4** Verify that the equation $x^4 e^{2y} - x^2 - y^2 = 12$ defines an implicit solution to this Initial Value Problem (**IVP**):

$$\begin{cases} \frac{dy}{dx} = \frac{2x^3 e^{2y} - x}{y - x^4 e^{2y}} \\ y(2) = 0 \end{cases}.$$

- 5** Let $p(t)$ be the number of Purdue students infected with the flu. If the total number of students at Purdue is T^* and the rate of change of $p(t)$ is proportional to the product of the number of infected students and non-infected students, express this as a mathematical model. What happens to the number of infected students in the long run?