

Name: _____

4. Let $\frac{dx}{dt} = 8x - 2x^3$, Graph qualitative solutions for $x(0) = 4, 1/2, -1$. Classify the equilibrium solutions and determine the inflection points.

5. a) Solve the equation: $2y'' - 5y' + 4y = 8e^x$

Ans: _____.

- b) Solve the equation: $y^{iv} + y'' = 0$

6. Find the general solution of $y'' + y = \sec x \tan x$.

Ans: _____.

(Extra Space)

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7. Let $t^2y'' - t(t+2)y' + (t+2)y = 0$. Find the general solution, given that $y_1 = t$ is a solution.

Ans: _____.

8. a) Solve the equation: $x^2y'' + 3xy' + 3y = 0$

Ans: _____.

b) Find the radius of convergence of the series solution of $(x^3 + 8)y'' + 4xy' + 2y = 0$, about $x = 1$.

Ans: _____.

9. Solve by Laplace Transforms

a) $y'' - 6y' + 9y = t^2e^{3t}$, $y(0) = 2$, $y'(0) = 6$

Ans: _____.

b) $y'' + 2y' + 17y = \delta(t - 3)$, $y(0) = 0$, $y'(0) = 0$

Ans: _____.

Name:

10. Find the first four non zero terms of a series solution of the equation: $9x^2y'' + 9x^2y' + 2y = 0$.
(Use the largest root of the indicial equation!)

Ans: _____.

Extra space