

1. (1 point) Library/Rochester/setDiffEQ1/osu_de_1_3.pg

Match the following differential equations with their solutions. The symbols A, B, C in the solutions stand for arbitrary constants.

You must get all of the answers correct to receive credit.

- 1. $\frac{d^2y}{dx^2} + 49y = 0$
 —2. $\frac{dy}{dx} = \frac{-2xy}{x^2 - 7y^2}$
 —3. $\frac{d^2y}{dx^2} + 10\frac{dy}{dx} + 25y = 0$
 —4. $\frac{dy}{dx} = 14xy$
 —5. $\frac{dy}{dx} + 15x^2y = 15x^2$

- A. $y = Ce^{-5x^3} + 1$
 B. $y = Ae^{7x^2}$
 C. $3yx^2 - 7y^3 = C$
 D. $y = Ae^{-5x} + Bxe^{-5x}$
 E. $y = A \cos(7x) + B \sin(7x)$

Correct Answers:

- E
- C
- D
- B
- A

2. (1 point) Library/MiamiUOhio/DiffEq/Definitions_and_Termino

logy/Problem18.pg

Let $y''' - 11y'' + 28y' = 0$.

Find all values of r such that $y = e^{rx}$ satisfies the differential equation. If there is more than one correct answer, enter your answers as a comma separated list.

$r =$ _____ help (numbers)

Correct Answers:

- 0, 7, 4

3. (1 point) Library/MiamiUOhio/DiffEq/Definitions_and_Termino

logy/Problem19.pg

Let $t^2y'' + 17ty' + 63y = 0$.

Find all values of r such that $y = t^r$ satisfies the differential equation for $t > 0$. If there is more than one correct answer, enter your answers as a comma separated list.

$r =$ _____ help (numbers)

Correct Answers:

- -9, -7

4. (1 point) Library/maCalcDB/setDiffEQ3Separable/ur_de_3_1.pg

A. Solve the following initial value problem:

$$(t^2 - 16t + 28) \frac{dy}{dt} = y$$

with $y(8) = 1$. (Find y as a function of t .)

$y =$ _____

B. On what interval is the solution valid?

Answer: It is valid for $___ < t < ___$.

C. Find the limit of the solution as t approaches the left end of the interval.

(Your answer should be a number or the word "infinite".)

Answer: _____

D. Similar to C, but for the right end.

Answer: _____

Correct Answers:

- $((14-t)/(t-2))^{**}(1/(2*6))$
- 2
- 14
- infinite
- 0

5. (1 point) Library/Wiley/setAnton_Section_8.4/Anton_8_4_Q9.p

g

Solve the initial value problem.

$$\frac{dy}{dx} - 2xy = 8x, y(0) = -2$$

$y =$ _____

Correct Answers:

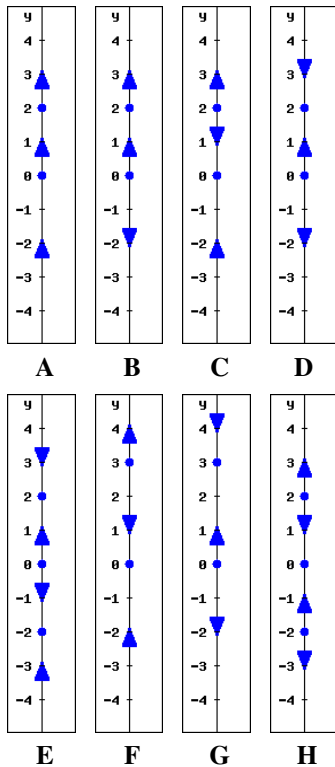
- $2 * e^{(x^2)} - 4$

6. (1 point) Library/FortLewis/DiffEq/1-First-order/06-Autonom

ous/BDH-1-6-37.pg

Determine which differential equation corresponds to each phase line. You should be able to state briefly how you know your choices are correct.

- ? 1. $\frac{dy}{dt} = y^2|y - 2|$
- ? 2. $\frac{dy}{dt} = y(2 - y)^2$
- ? 3. $\frac{dy}{dt} = 4y - y^3$
- ? 4. $\frac{dy}{dt} = y(y - 2)$
- ? 5. $\frac{dy}{dt} = y^2 - 3y$
- ? 6. $\frac{dy}{dt} = 3y - y^2$
- ? 7. $\frac{dy}{dt} = 2y - y^2$
- ? 8. $\frac{dy}{dt} = y^3 - 4y$



Correct Answers:

- A
- B
- E
- C

- F
- G
- D
- H

7. (1 point) Library/FortLewis/DiffEq/1-First-order/06-Autonomous/BDH-1-7-01.pg

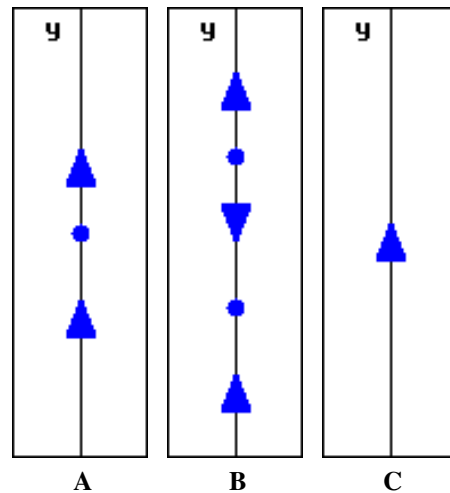
Determine the bifurcation value(s) for the one-parameter family

$$\frac{dy}{dt} = y^2 + k.$$

$k =$ _____ help (numbers)

Determine which differential equation corresponds to each phase line. You should be able to state briefly how you know your choices are correct.

- ? 1. k larger than the bifurcation value
- ? 2. k equal to the bifurcation value
- ? 3. k smaller than the bifurcation value



Correct Answers:

- 0
- C
- A
- B