

Name _____ Class _____ Date _____
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Section 2.1.1 - Direction Fields

1. If $a > 0$ and $b > 0$, the autonomous differential equation $\frac{dP}{dt} = P(a - bP)$ has a solution that is
Select the correct answer.

- a. increasing everywhere
- b. decreasing everywhere
- c. increasing if $0 < P < \frac{a}{b}$
- d. decreasing if $0 < P < \frac{a}{b}$
- e. increasing if $P > \frac{a}{b}$

ANSWER:

c

2. The autonomous differential equation $\frac{dx}{dt} = x(x-1)(x+1)$ has a solution that is
Select the correct answer.

- a. increasing everywhere
- b. decreasing everywhere
- c. increasing if $0 < x < 1$
- d. decreasing if $-1 < x < 0$
- e. increasing if $x > 1$

ANSWER:

e

3. Assume that $a > 0$ and $b > 0$. The autonomous differential equation $\frac{dP}{dt} = P(a + bP)$ has a solution that is
Select the correct answer.

- a. increasing everywhere
- b. decreasing everywhere
- c. increasing if $-\frac{a}{b} < P < 0$
- d. decreasing if $-\frac{a}{b} < P < 0$
- e. decreasing if $P < -\frac{a}{b}$

ANSWER:

d

Name

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Section 2.1.1 - Direction Fields

$$\frac{dx}{dt} = x^2(x-4)$$

4. The autonomous differential equation has a solution that is
Select the correct answer.

- a. increasing everywhere
- b. decreasing everywhere
- c. increasing if $0 < x < 4$
- d. decreasing if $x > 4$
- e. increasing if $x > 4$

ANSWER:

e