Calculus
Chap. 6 section 2
Targets with examples

Name: _____
Date: _____
Period: _____

Solving Differential Equations

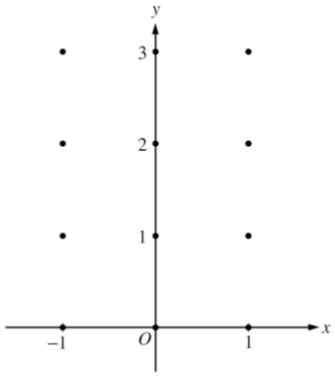
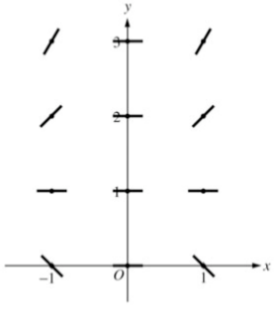
Challenging problems can be solved with differential equations.

6B Understanding Slope Fields

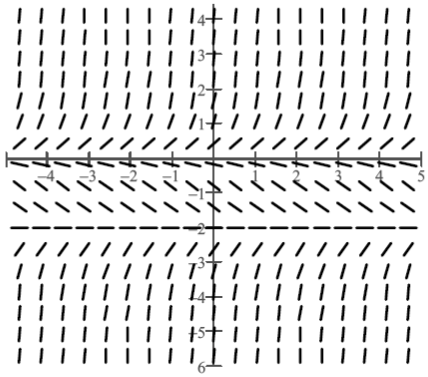
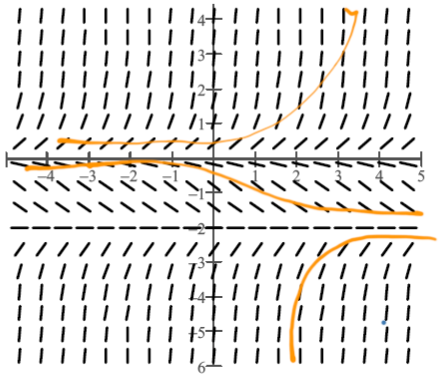
1. Create slope fields from a differential equation
2. Read and interpret slope fields
3. Match slope fields to differential equations
4. Use slope fields to identify solutions to differential equations

No book pratice for this target

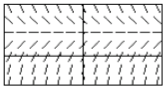
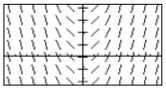
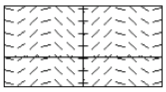
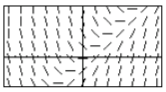
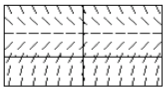
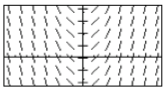
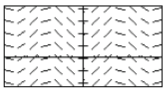
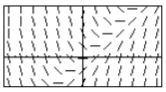
Create slope fields from a differential equation

Sample Question	Consider the differential equation $\frac{dy}{dx} = x^2(y-1)$.  While the slope field in part (a) is drawn at only twelve points, it is defined at every point in the xy-plane. Describe all points in the xy-plane for which the slopes are positive.
Sample Response	Show / Hide Answer Consider the differential equation $\frac{dy}{dx} = x^2(y-1)$.  While the slope field in part (a) is drawn at only twelve points, it is defined at every point in the xy-plane. Describe all points in the xy-plane for which the slopes are positive.

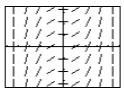
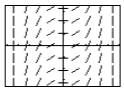
Read and interpret slope fields

Sample Question	 Which statement is true about the solutions $y(x)$, of a differential equation whose slope field is shown above? I. If $y(0) > 0$ then $\lim_{x\to\infty} y(x) \approx 0$. II. If $-2 < y(0) < 0$ then $\lim_{x\to\infty} y(x) \approx -2$. III. If $y(0) < -2$ then $\lim_{x\to\infty} y(x) \approx -2$. (A) I only (B) II only (C) III only (D) II and III only (E) I, II, and III
Sample Response	Show / Hide Answer  Which statement is true about the solutions $y(x)$, of a differential equation whose slope field is shown above? I. If $y(0) > 0$ then $\lim_{x\to\infty} y(x) \approx 0$. II. If $-2 < y(0) < 0$ then $\lim_{x\to\infty} y(x) \approx -2$. III. If $y(0) < -2$ then $\lim_{x\to\infty} y(x) \approx -2$. (A) I only (B) II only (C) III only (D) II and III only (E) I, II, and III

Match slope fields to differential equations

Sample Question	Match the slope fields with their differential equations. (A)  (B)  (C)  (D)  7. $\frac{dy}{dx} = \sin x$ 8. $\frac{dy}{dx} = x - y$ 9. $\frac{dy}{dx} = 2 - y$ 10. $\frac{dy}{dx} = x$
Sample Response	Show / Hide Answer Match the slope fields with their differential equations. (A)  (B)  (C)  (D)  7. $\frac{dy}{dx} = \sin x$ 8. $\frac{dy}{dx} = x - y$ 9. $\frac{dy}{dx} = 2 - y$ 10. $\frac{dy}{dx} = x$

Use slope fields to identify solutions to differential equations

Sample Question	 The slope field for a certain differential equation is shown above. Which of the following could be a specific solution to that differential equation? (A) $y = \sin x$ (B) $y = \cos x$ (C) $y = x^2$ (D) $y = \frac{1}{6}x^3$ (E) $y = \ln x$
Sample Response	Show / Hide Answer  The slope field for a certain differential equation is shown above. Which of the following could be a specific solution to that differential equation? (A) $y = \sin x$ (B) $y = \cos x$ (C) $y = x^2$ (D) $y = \frac{1}{6}x^3$ (E) $y = \ln x$