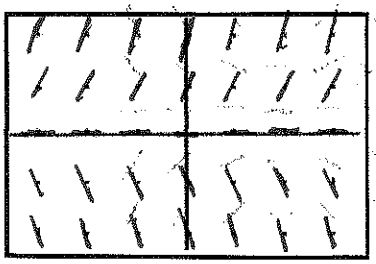
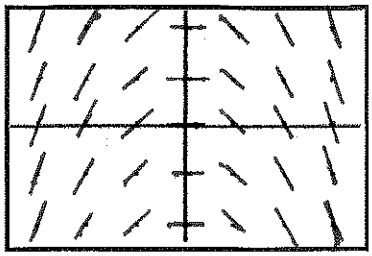
Slope Field WS Name _____
Period _____

Sketch the following Slopefields

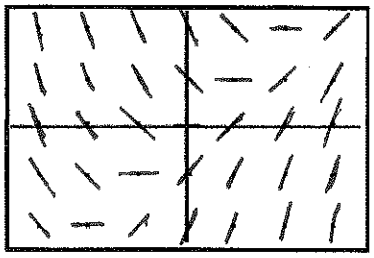
1) $\frac{dy}{dx} = 2y$



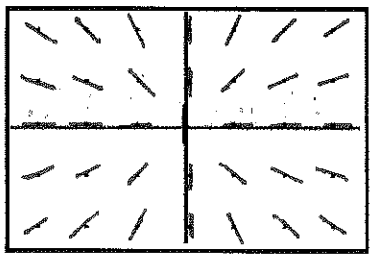
2) $\frac{dy}{dx} = -x$



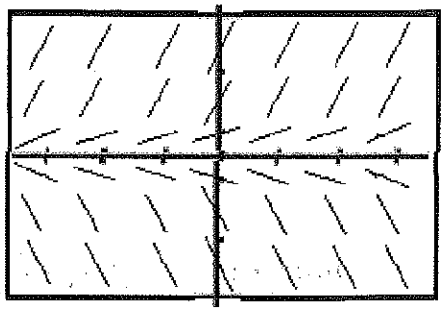
3) $\frac{dy}{dx} = x - y$



4) $\frac{dy}{dx} = \frac{y}{x}$



5) The slope field for a differential equation is shown at the right. Which statement is true for solutions of the differential equation.



I. For $x<0$ all solutions are decreasing

II. All solutions level off near the x-axis

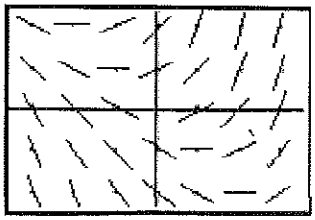
III. For $y>0$ all solutions are increasing.

(A) I only (B) II Only (C) III Only (D) II and III Only (E) I, II , III Only

6) The slope field for the differential equation $\frac{dy}{dx} = \frac{x^2y + y^2}{4x + 2y}$ will have vertical segments when

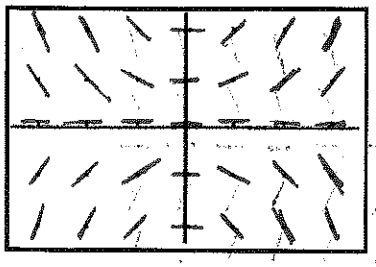
a) $y = 2x$ only (b) $y = -2x$ only c) $y = -x^2$ only d) $y = 0$ only

7) The given slope field is for which differential equation?



(A) $\frac{dy}{dx} = 1 + x$ (B) $\frac{dy}{dx} = x^2$ (C) $\frac{dy}{dx} = y + x$ (D) $\frac{dy}{dx} = \frac{x}{y}$ (E) $\frac{dy}{dx} = \ln x$

8) Consider the differential equation $\frac{dy}{dx} = \frac{xy}{2}$



a) Sketch the slope field for this equation.

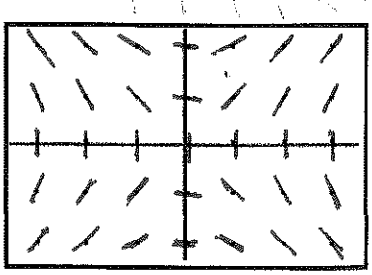
b) Find the equation of the line tangent to the function at the point (1,1)

$m = \frac{1 \cdot 1}{2} = \frac{1}{2}$ $y - 1 = m(x-1)$ $\boxed{y - 1 = \frac{1}{2}(x-1)}$ or $y = \frac{1}{2}x + \frac{1}{2}$

c) Use this tangent line to approximate the value of f(1.2)

$y = \frac{1}{2}(1.2) + \frac{1}{2} = \boxed{1.1}$

9) Consider the differential equation $\frac{dy}{dx} = \frac{x}{y}$



a) Sketch the slope field for this equation.

b) Find the equation of the line tangent to the function at the point (0,1)

$m = \frac{0}{1} = 0$ $y - 1 = 0(x-0)$ $\boxed{y = 1}$

↑ use (1,1)

$m = \frac{1}{1} = 1$

$y - 1 = 1(x-1)$

$y = x$

c) Use this tangent line to approximate the value of f(1.2)

$\boxed{f(1.2) = 1.2}$