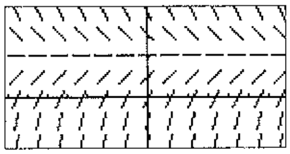
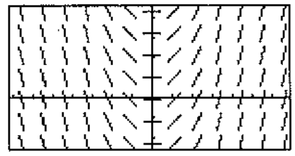
**Review for Slope Fields Test**

Match the slope fields with their differential equations.

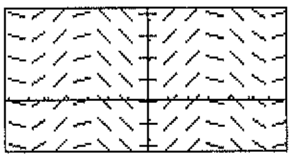
(A)



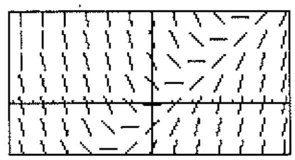
(B)



(C)



(D)



**1.** $\frac{dy}{dx} = \sin x$ **2.** $\frac{dy}{dx} = x - y$ **3.** $\frac{dy}{dx} = 2 - y$ **4.** $\frac{dy}{dx} = x$

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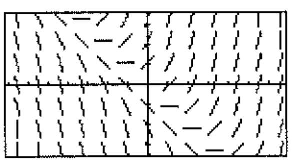
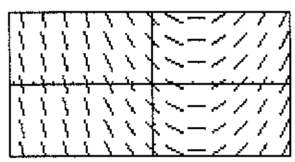
Match the slope fields with their differential equations.

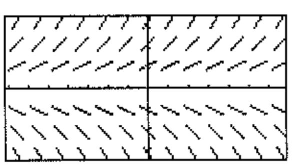
(A)



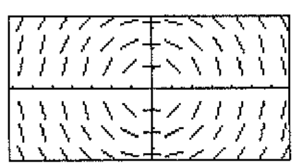
(B)



(C)



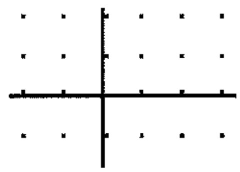
(D)



**5.** $\frac{dy}{dx} = .5x - 1$ **6.** $\frac{dy}{dx} = .5y$ **7.** $\frac{dy}{dx} = -\frac{x}{y}$ **8.** $\frac{dy}{dx} = x + y$

**9.** Consider the differential equation given by $\frac{dy}{dx} = \frac{xy^2}{4}$.

(a) On the axes provided, sketch a slope field for the given differential equation.



(b) Let $f$ be the function that satisfies the given differential equation. Write an equation for the tangent line to the curve $y = f(x)$ through the point (1, 1). Then use your tangent line equation to estimate the value of $f(1.2)$

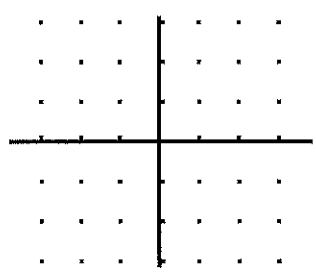
(c) Find the particular solution $y = f(x)$ to the differential equation with the initial condition $f(1) = 1$. Use your solution to find $f(1.2)$.

(d) Describe all points in the xy plane for which the slopes are positive.

(e) Use Euler's Method to with initial condition (1,1) and step size h=.2 to approximate y(1.6).

**10.** Consider the differential equation given by $\frac{dy}{dx} = x^3(y+3)$. Let $y = f(x)$ be the particular solution to this differential equation with initial condition $f(2) = 1$.

(a) On the axes provided, sketch a slope field for the given differential equation.



(b) Write an equation for the tangent line at $x = 2$.

(c) Find the particular solution $y = f(x)$ to the differential equation with the initial condition $f(2) = 1$.

(d) Describe all points in the xy plane for which the slopes are negative.

(e) Use Euler's method with the given step sizes to estimate the value of y(2.4) for this differential equation.

i. h=.1

ii. h=.2