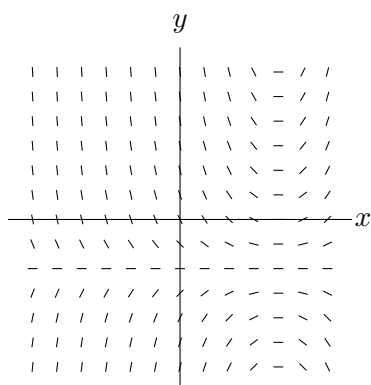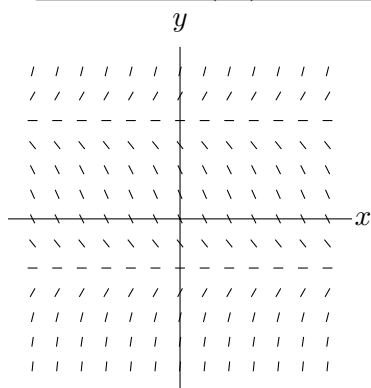**6**. [10 points] Match the following. For each blank, there is only one correct answer.

   a. [4 points] For each slope field on the left, write the letter corresponding to the differential equation that generates that slope field in the blank provided.

I. _____ (E.) _____

II. _____ (B.) _____

(A.) $\dfrac{dy}{dx} = (y+2)(y-1)$

(B.) $\dfrac{dy}{dx} = (y-2)(y+1)$

(C.) $\dfrac{dy}{dx} = (y+1)(y-2)^2$

(D.) $\dfrac{dy}{dx} = (2-x)(y+1)$

(E.) $\dfrac{dy}{dx} = (x-2)(y+1)$

(F.) $\dfrac{dy}{dx} = (x-1)(y-2)$

   b. [6 points] Let $r(\theta) = k$ be a polar curve where $k > 0$ is a constant. Match the quantities on the left with their formulas (in terms of θ) on the right.

I. $\dfrac{dy}{d\theta} = $ _____ (A.) _____

II. $\dfrac{dx}{d\theta} = $ _____ (D.) _____

III. $\dfrac{dy}{dx} = $ _____ (H.) _____

(A.) $k\cos(\theta)$

(B.) $-k\cos(\theta)$

(C.) $k\sin(\theta)$

(D.) $-k\sin(\theta)$

(E.) $\tan(\theta)$

(F.) $-\tan(\theta)$

(G.) $\dfrac{1}{\tan(\theta)}$

(H.) $-\dfrac{1}{\tan(\theta)}$