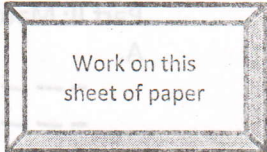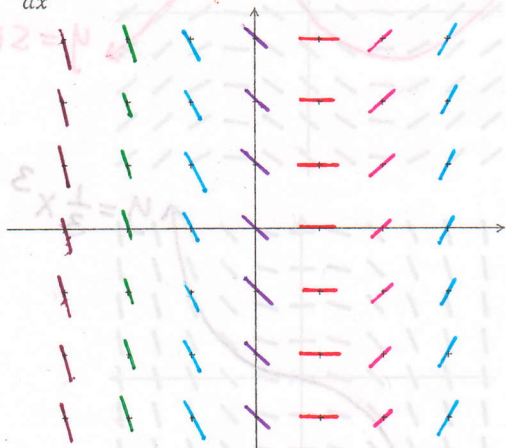Name: **Stew Dent**

Date: _____ Per: _____
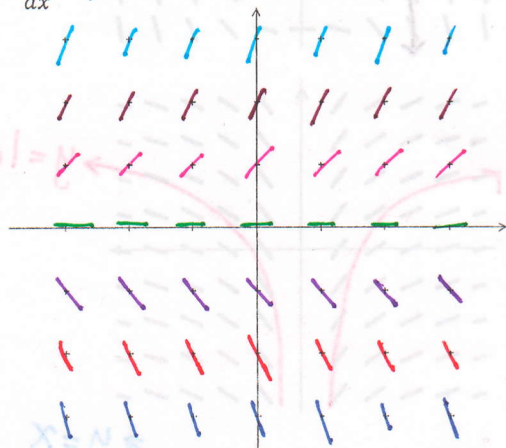
20 Slope Fields and Differential Equations

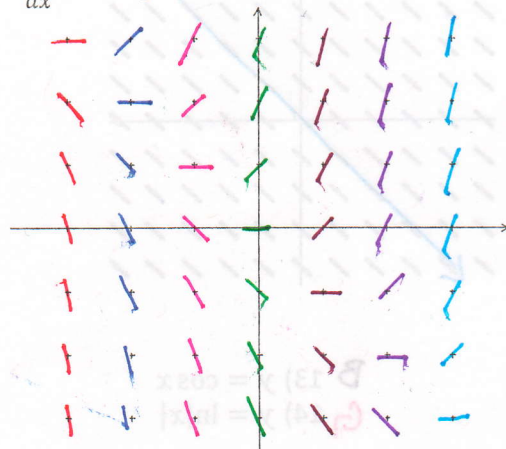**Part I: Draw a slope field for each of the following differential equations.**
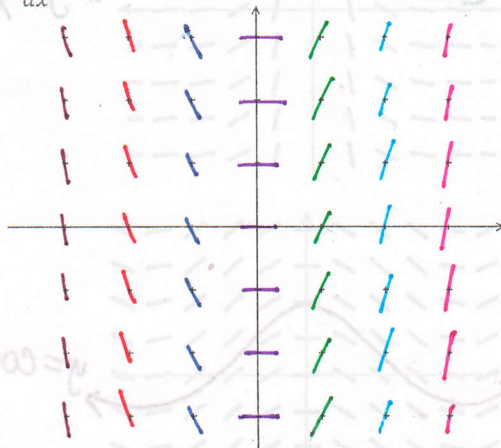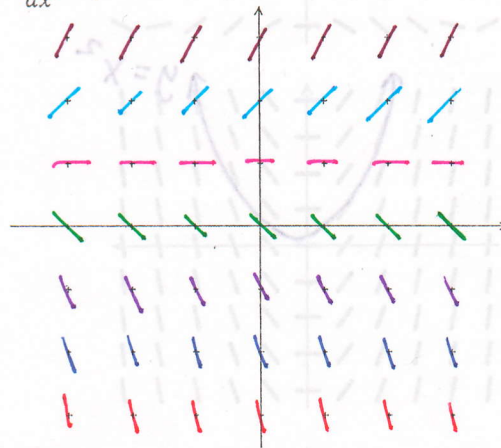
1) $\dfrac{dy}{dx} = x - 1$

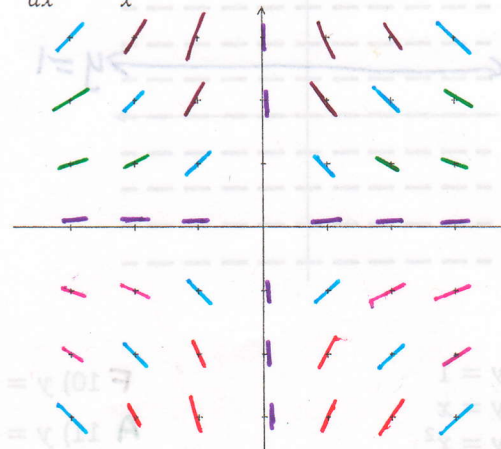4) $\dfrac{dy}{dx} = 2x$

2) $\dfrac{dy}{dx} = y$

5) $\dfrac{dy}{dx} = y - 1$
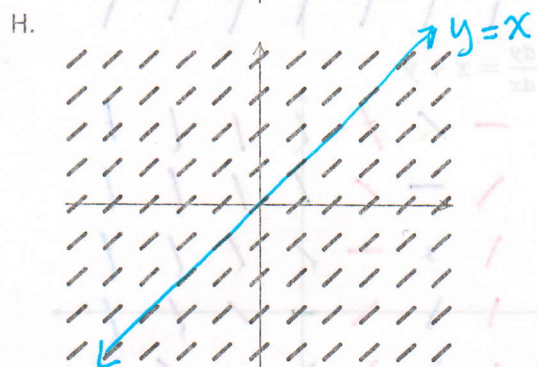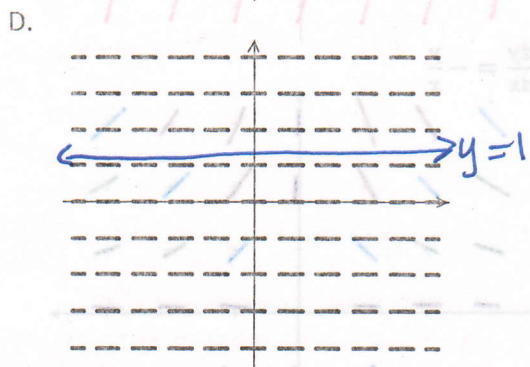
3) $\dfrac{dy}{dx} = x + y$

6) $\dfrac{dy}{dx} = -\dfrac{y}{x}$

SHOW ALL WORK CLEARLY

Part II: Match each slope field with the equation that the slope field could represent.

A.

$y = \dfrac{1}{x^2}$

E.

$y = \sin x$

B.

$y = \cos x$

F.

$y = \dfrac{1}{3}x^3$

C.

$y = x^2$

G.

$y = \ln|x|$

D.

$y = 1$

H.

$y = x$
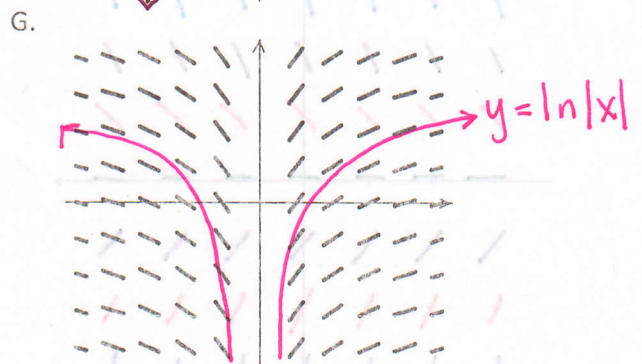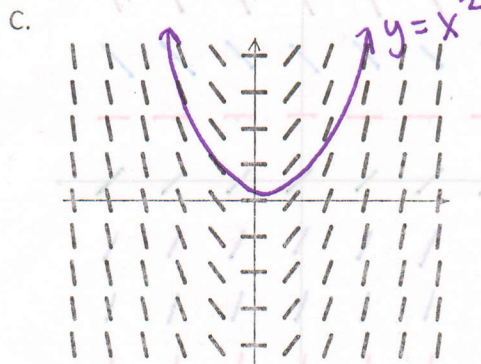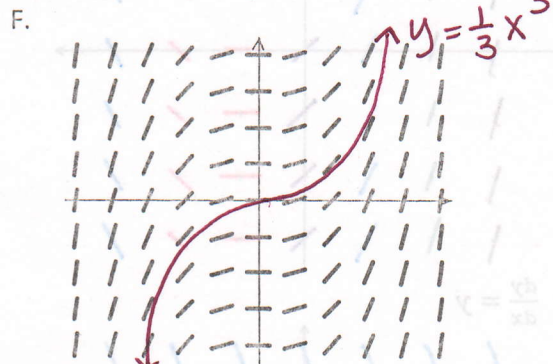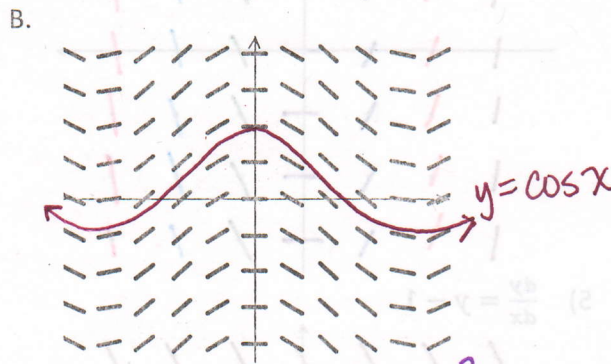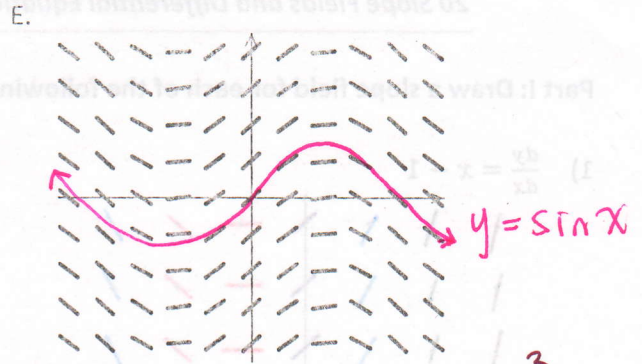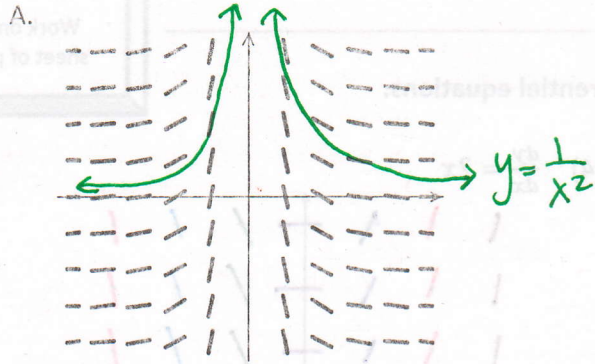
D 7) $y = 1$
H 8) $y = x$
C 9) $y = x^2$

F 10) $y = \dfrac{1}{6}x^3$
A 11) $y = \dfrac{1}{x^2}$
E 12) $y = \sin x$

B 13) $y = \cos x$
G 14) $y = \ln|x|$

SHOW ALL WORK CLEARLY

Part III: Sketching Solution Curves

15) The calculator drawn slope field for the differential equation $\frac{dy}{dx} = xy$ is shown below. The solution
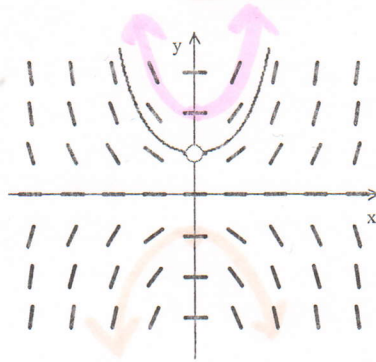   curve through the point $(0, 1)$ is also shown.
    a. Sketch the solution curve through the point $(0, 2)$.
    b. Sketch the solution curve through the point $(0, -1)$.

16) The calculator drawn slope field for the differential equation $\frac{dy}{dx} = x + y$ is shown below.
    a. Sketch the solution curve through the point $(0, 1)$.
    b. Sketch the solution curve through the point $(-3, 0)$.

SHOW ALL WORK CLEARLY