Suggested problems 29

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1. Find all the critical point(s) of each nonlinear system given. Then determine the type and stability of each critical point.

   (a)
   $$x' = xy + 3y,$$
   $$y' = xy - 3x$$

   (b)
   $$x' = 10 - 2xy,$$
   $$y' = x - 5y$$

   (c)
   $$x' = x^2 + y^2 - 13,$$
   $$y' = xy - 2x - 2y + 4$$