## Suggested problems 29

Instructor: Alena Erchenko

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

$$
\begin{array}{r}
x^{\prime}=x y+3 y, \\
y^{\prime}=x y-3 x
\end{array}
$$

(b)

$$
\begin{gathered}
x^{\prime}=10-2 x y \\
y^{\prime}=x-5 y
\end{gathered}
$$

(c)

$$
\begin{gathered}
x^{\prime}=x^{2}+y^{2}-13, \\
y^{\prime}=x y-2 x-2 y+4
\end{gathered}
$$

