11. Eight systems of differential equations and four direction fields are given below. Determine the system that corresponds to each direction field and state briefly how you know your choice is correct. You should do this exercise without using technology.

(i) $\dfrac{dx}{dt} = y - 1$, $\dfrac{dy}{dt} = -x - 1$

(ii) $\dfrac{dx}{dt} = x^2 - 1$, $\dfrac{dy}{dt} = y$

(iii) $\dfrac{dx}{dt} = x + 2y$, $\dfrac{dy}{dt} = -y$

(iv) $\dfrac{dx}{dt} = 2x$, $\dfrac{dy}{dt} = y$

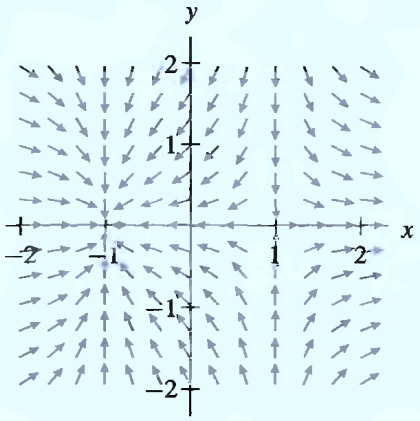
(v) $\dfrac{dx}{dt} = x$, $\dfrac{dy}{dt} = 2y$

(vi) $\dfrac{dx}{dt} = 1 - y$, $\dfrac{dy}{dt} = 1 + x$

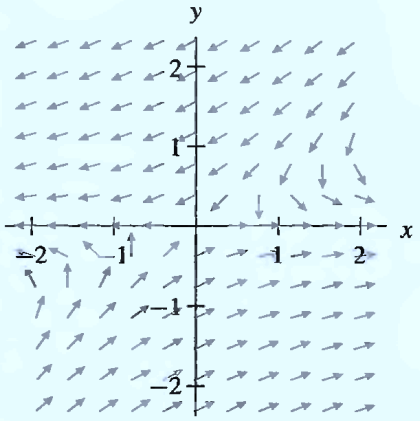
(vii) $\dfrac{dx}{dt} = x^2 - 1$, $\dfrac{dy}{dt} = -y$

(viii) $\dfrac{dx}{dt} = x - 2y$, $\dfrac{dy}{dt} = -y$

(a)



(b)



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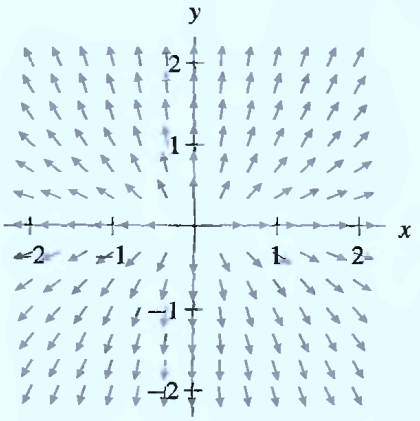
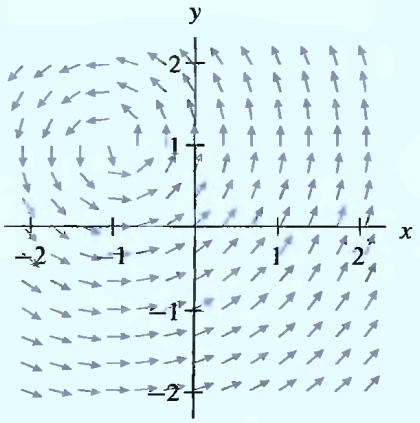
(d)