

Name \_\_\_\_\_  
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**Math 2250-10**  
**Quiz 3**  
**January 24, 2014**

1) Consider the following differential equation for a function  $x(t)$ . It is not based on the logistic population model, but does have applications that we will discuss very soon.

$$x'(t) = x^2 - x - 2.$$

Find the equilibrium solutions. Then draw the phase diagram and indicate the stability of the equilibrium solutions.

(3 points)

2) Compute the partial fractions decomposition for

$$\frac{1}{(x-2)(x+1)}.$$

You may use either of the methods we've discussed.

(3 points)

3) Use your work from 2 to solve the initial value problem

$$x'(t) = x^2 - x - 2$$

$$x(0) = 1.$$

(4 points)