

Name: _____

Directions: Show all work. No credit for answers without work.

1. [5 points] The general solution to $xy' = x^2 + y$ is one of the following:

$$y = Cx^2 + x \mid y = x^2 + Cx \mid y = C(x^2 + x) \mid y = x^2 + x + C$$

- (a) Which of the above four function families is the general solution?

- (b) Solve the initial value problem: $xy' = x^2 + y$, and $y(2) = 0$.

2. [5 points] A ball is thrown upward from the top of a tall building at 15m/s. If the ball hits the ground at 70m/s, how tall is the building? (Recall that the acceleration due to gravity is about 9.8m/s^2 .)