

Answer the questions fully to your best ability. Use the space provided. If you run out of room, use the backsides. No partial credit will be given if you do not show the steps of your calculations! **Write as neatly as possible!**

Name: _____

1. Find stationary points for these functions and identify if it is a maximum, a minimum or inflection point:

(2) (a) $y = 2x^2 - 3x + 4$

(2) (b) $y = 10x \cdot e^{\ln x} + 4x$

(2) (c) $y = x^{-5}$

2. Let's say that your score (S) you will get on this quiz is a function of time (t_S) that you spent at home studying: $S = -4t_S^2 + 5t_S$. But you also like watching TV the same way you like getting high test grades. Your happiness (H) that you get from watching TV is a function of time also: $H = 2t_{TV} - 5$. Thus you are actually indifferent between getting a 0 on this quiz and watching TV for 2.5 hours, because it yields same satisfaction for you.

- (2) (a) How much time should you allocate for studying? [Hint: equate marginal benefit of studying to marginal benefit of watching TV.]

Question 2 continues on the next page...

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- (2) (b) Now assume $H = M_H \cdot t - 5$, where a M_H is marginal happiness from extra hour of TV time. Derive your demand for study time. [Hint: You should find t_S as a function of M_H]
- (2) (c) Find the study time elasticity with respect to your marginal happiness of watching TV. [Hint: Demand elasticity!]