

## Problem Set 1

Find the stationary values of the following functions and check whether they are relative maxima or minima or inflection points:

1.  $y = -2x^2 + 8x + 7$

2.  $y = 5x^2 + x$

3.  $y = 3x^2 + 3$

4.  $y = 3x^2 - 6x + 2$

5.  $y = x^3 - 3x + 5$

6.  $y = \frac{1}{3}x^3 - x^2 + x + 10$

7.  $y = -x^3 + 4.5x^2 - 6x + 6$

8.  $y = x^3 - 3x^2 + 2$

9.  $y = 4x^2 - x$

10.  $y = -2x^2 + 8x + 25$

11.  $y = x^3 + 6x^2 + 9$

12.  $y = \frac{1}{3}x^3 - 3x^2 + 5x + 3$

13.  $y = \frac{2x}{1-2x}$

**Solve all the problems using**    *i) First derivative method*

*ii) Second derivative method*