Find all stationary points for each of the following functions. Use values of f(x), the function itself, to classify each as a maximum, a minimum, or neither. Show your work and your answers neatly organized.

1. $y = f(x) = 3x^2 - 24x + 46$

2. $y = f(x) = x^3 + 6x^2 - 2$

3. $y = f(x) = 3x^4 + 12x^3 - 78x^2 - 180x + 25$

4. $y = f(x) = x^4 - 8x^2 + 5$

Find all stationary points for each of the following functions. Use values of f '(x), the slope, to classify each as a maximum, a minimum, or neither. Show your work and your answers neatly organized.

5. $y = f(x) = -x^2 + x + 2$

6. $y = f(x) = 2x^3 - 30x^2 + 150x - 200$

7. $y = f(x) = -4x^3 + 21x^2 + 24x$