Concavity and the Second-Derivative Test

1. Determine the open intervals on which the graph of the function is concave upward or concave downward
(similar to p.193 #7)

$$y = -x^3 + 5x^2 - 4$$

2. Determine the open intervals on which the graph of the function is concave upward or concave downward
(similar to p.193 #10)

$$y = \frac{x^2 + 9}{9 - x^2}$$

3. Discuss the concavity of the graph of the function and find the points of inflection
(similar to p.193 #15)

$$y = x^3 - 9x^2 + 12x - 6$$

4. Discuss the concavity of the graph of the function and find the points of inflection
(similar to p.193 #15)

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

5. Discuss the concavity of the graph of the function and find the points of inflection

$$y = \frac{x - 1}{x + 2}$$

6. Find all relative extrema of the function. Use the second-derivative test when applicable
(similar to p.193 #24)

$$y = 2x^3 + 3x^2 - 36x + 12$$