1. Evaluate (a) \( \sin^{-1}(\sqrt{3}/2) \) (b) \( \tan^{-1}(\sqrt{3}/3) \) (c) \( \sec^{-1}\sqrt{2} \)

2. Compute \( \frac{dy}{dx} \): (a) \( y = \frac{x}{2} \sin^{-1} \frac{x}{2} \) (b) \( y = e^{\tan^{-1}x} \) (c) \( y = \sqrt{17 - \sec^{-1}x} \)

3. Find the stationary points of each of these functions. For each stationary point, determine whether it is a local maximum, a local minimum, or neither.

(a) \( y = x^4 + 6x^3 - 5x^2 + 17 \) (b) \( y = xe^{-x} \) (c) \( y = \frac{x + 2}{x^2 + x + 5} \)

(d) \( y = x + \sin x \) for \( 0 \leq x \leq 2\pi \)

4. Find the inflection points of \( y = e^x \sin x \) for \( 0 \leq x \leq 2\pi \).

5. Solve the following equations for real roots.

(a) \( x^3 + 5x^2 - 7x + 1 = 0 \) (b) \( x^4 - 3x^2 + 2 = 0 \) (c) \( x^3 + 2x^2 + 3x + 6 = 0 \).

6. Solve the following inequalities.

(a) \( x^2 < 3 \) (b) \( x^2 + 5x - 6 > 0 \) (c) \( \frac{1}{x + 2} \leq 4 \) (d) \( \frac{x + 2}{2x - 1} \leq 4x - 1 \).

7. (a) The sum of a number and five times its inverse is 6. Find the number(s).

(b) The sum of the squares of 2 consecutive positive integers is 265. Find these integers.