1. Explain how synthetic division may be used to find the factors/zeros of a polynomial function. Give an example of how this is accomplished.

Use synthetic division to find the function value.

1) f(x) = 2x4 + 4x3 + 2x2 + 3x + 8; find f(-2).

Write the quadratic function in the form y = a(x - h)2 + k.

2) y = x2 - 2x - 9

Find the product.

3) [x - (-6 + $\sqrt{13}$)][x - (-6 - $\sqrt{13}$)]

Use the leading coefficient test to determine whether y→∞ or y→-∞ as x→ -∞.

4) y = -5x3 + 4x2 + 6x - 7

For the given function, find all asymptotes of the type indicated (if there are any).

5) f(x) = $\frac{x-9}{x^{2}- 4}$ vertical

Use the rational zero theorem to find all possible rational zeros for the polynomial function.

6) P(x) = 3x3 + 43x2 + 43x + 27

Solve the inequality. Give answer in interval notation.

7) (x + 2)(x - 1)(x - 10) > 0

Solve the inequality.

8) $\frac{x+21}{x+3} <2$

Discuss the symmetry of the graph of the polynomial function.

9) f(x) = x2 + 2x - 1

Solve the absolute value equation.

10) |x2 – 10| = 4

Solve the quadratic inequality by graphing an appropriate quadratic function.

11) x2 - 2x - 8 ≤ 0

Use the theorem on bounds to establish the best integral bounds for the roots of the equation.

12) 6x3 - 7x2 + 7x + 9 = 0

State the degree of the polynomial equation.

13) 4(x + 8)2(x - 8)3 = 0