1- Answers:

a. No, because it has non integer exponent.

b. Yes.

c. No, because it has negative exponent,

2- Answers:

a. Degree is 4 and leading coefficient is -1.

b. Degree is 6 and leading coefficient is 2.

3- The y-intercept is $(0, 15)$.

4- The zeros are $\{-4, -2, 0, 2, 4\}$ with corresponding multiplicity $\{1, 1, 2, 1, 1\}$.

5- Answers:

a. As $x \to -\infty$, then $f(x) = -5x^3 - 4x + 1 \to \infty$ and as $x \to \infty$, then $f(x) \to -\infty$.

b. As $x \to -\infty$, then $f(x) = x(x+1)(x-1)(x+4) \to \infty$ and as $x \to \infty$, then $f(x) \to \infty$.