Pre-Calculus/Trig 3 Name: _____
UNIT 2: Polynomial Functions – SECTION 2 WORKSHEET Date: _____

POLYNOMIAL FUNCTIONS OF HIGHER DEGREE

Directions: Find all factors, zeros (including multiplicity!), x-intercepts, and possible turning points for each function.

1.) $f(x) = x^3 - 4x^2 + 4x$

Factors: _____
Zeros: _____
x-intercept(s): _____
Possible turning points: _____

2.) $f(x) = x^4 - x^3 - 20x^2$

Factors: _____
Zeros: _____
x-intercept(s): _____
Possible turning points: _____

3.) $f(x) = 2x^4 - 2x^2 - 40$

Factors: _____
Zeros: _____
x-intercept(s): _____
Possible turning points: _____

4.) $f(x) = x^3 - 4x^2 - 25x + 100$

Factors: _____
Zeros: _____
x-intercept(s): _____
Possible turning points: _____

Directions: Write a polynomial function of least degree with the given zeros.

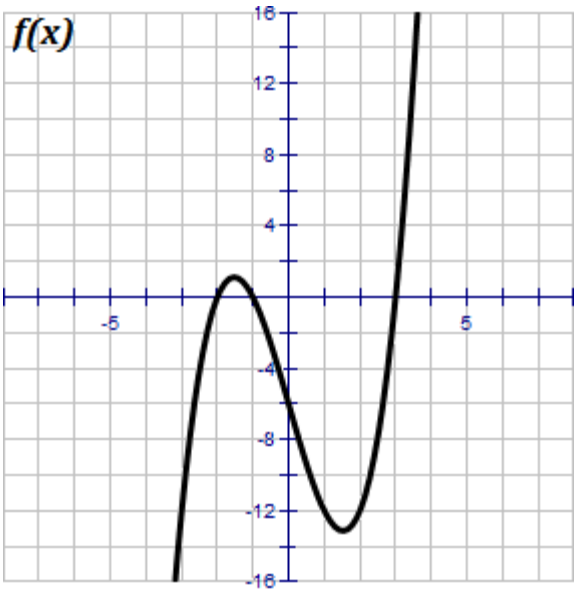
5.) $f(x) =$ _____

Factors: _____
Zeros: $\boldsymbol{x = \{-3,\ -1,\ \pm\sqrt{2}\}}$
x-intercept(s): _____
Possible turning points: _____

6.) $f(x) =$ _____

Factors: _____
Zeros: $\boldsymbol{x = \{-5,\ 2,\ \pm 4i\}}$
x-intercept(s): _____
Possible turning points: _____

Directions: Use the graph of $f(x)$ to answer the following questions.



7.) What is the least degree of $f(x)$?

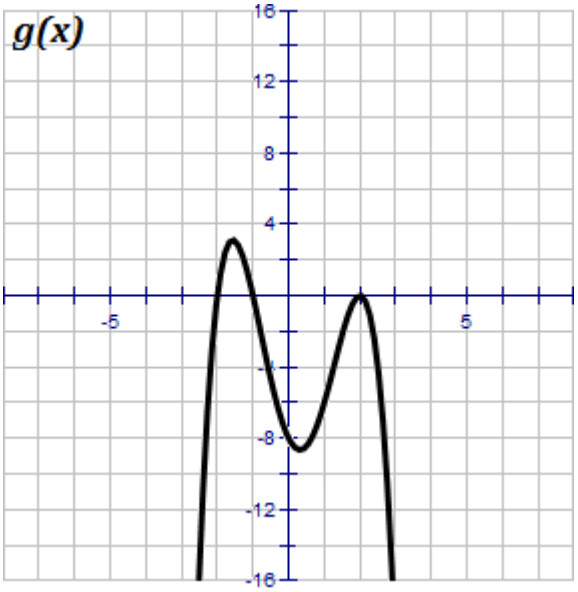
8.) Describe the end behavior.

$x \to -\infty$ $f(x) \to$ _____ $x \to \infty$ $f(x) \to$ _____

9.) Determine the linear factorization of $f(x)$.

10.) Write the equation of the polynomial function $f(x)$.

Directions: Use the graph of $g(x)$ to answer the following questions.



11.) What is the least degree of $g(x)$?

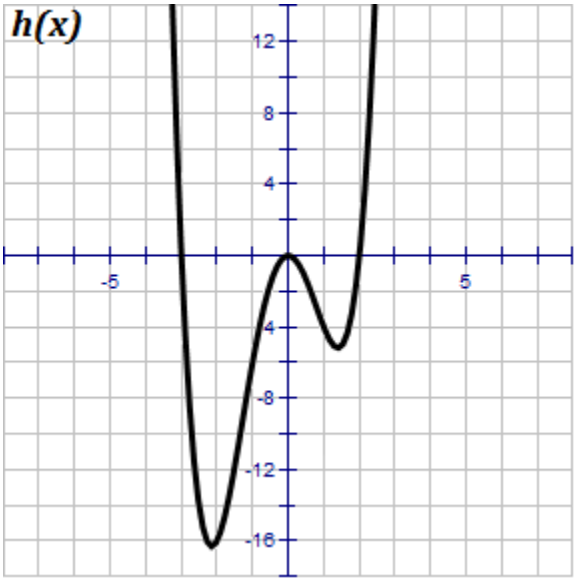
12.) Describe the end behavior.

$x \to -\infty$ $g(x) \to$ _____ $x \to \infty$ $g(x) \to$ _____

13.) Determine the linear factorization of $g(x)$.

14.) Write the equation of the polynomial function $g(x)$.

Directions: Use the graph of $h(x)$ to answer the following questions.



15.) What is the least degree of $h(x)$?

16.) Describe the end behavior.

$x \to -\infty$ $h(x) \to$ _____ $x \to \infty$ $h(x) \to$ _____

17.) Determine the linear factorization of $h(x)$.

18.) Write the equation of the polynomial function $h(x)$.