## Graphing Polynomial Functions Worksheet

1. Explain what is meant by a continuous graph? No breaks in graph, draw without lifting a pencil.
2. Name a feature of the graph of $f(x)=|x|$ that is not shared by the graphs of polynomial functions. An absolute value graph is straight edges and a sharp point, graphs of polynomials have curves.
3. Does the graph of $f(x)=2 x^{4}-3 x$ rise or fall to the right? How can you tell? What happens to the left? The graph rises to the left and right because the polynomial is an even degree polynomial and the leading coefficient is positive.
4. State the maximum number of turns in the following graphs:
a) $f(x)=x^{3}-4 x 2$ turns
b) $g(x)=x^{6}-4 x^{2} 5$ turns
c) $f(x)=-x^{2}-5 x+61$ turn
d) $g(x)=x^{5}-4 x^{3}+64$ turns
e) $f(x)=-3 x^{4}-5 x+63$ turns
5. Determine the right and left behavior of the following graphs:
a) $f(x)=-x^{3}+3 x$ rises left, falls right
b) $f(x)=2 x^{4}-5 x^{2}+4$ rises right, rises left
c) $f(x)=(x-1)(x+3)(x-1)$ falls left, rises right
d) $f(x)=-x^{4}+x^{2}$ falls left, falls right
e) $f(x)=-2 x^{5}+x^{4}-2 x$ rises left, falls right
f) $f(x)=3 x^{5}+x^{3}-2$ falls left, rises right
6. Find:
i) the zeros of the following functions
ii) left-right behavior
iii) sketch the graph of the function.

c) $f(x)=x^{4}-2 x^{3}-3 x^{2}+4 x+4$

e) $f(x)=(x-4)^{3}$

b) $f(x)=-x^{3}+4 x$

d) $f(x)=-x^{5}-2$

f) $f(x)=x^{3}+5 x^{2}+2 x-8$

