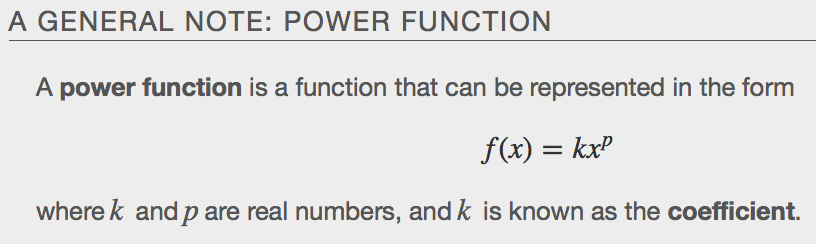
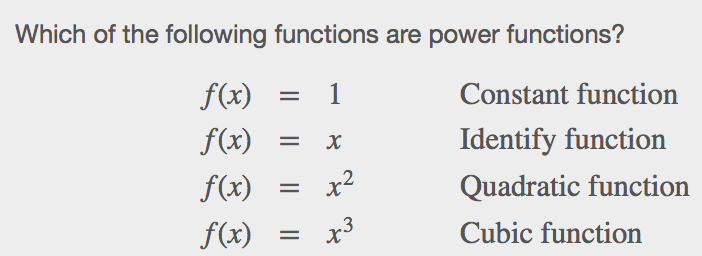
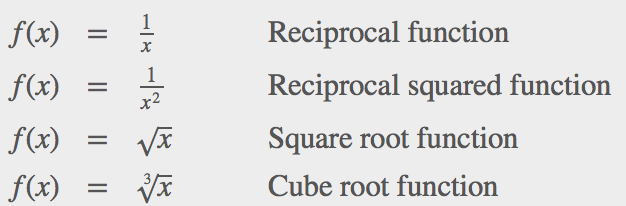
**5.2 – Power Functions and Polynomial Functions**

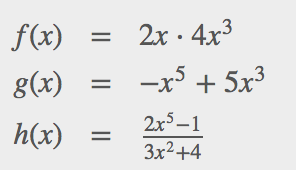
A **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ function** is a function with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ term that is the product of a real number, a **coefficient,** and a variable raised to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ real number.

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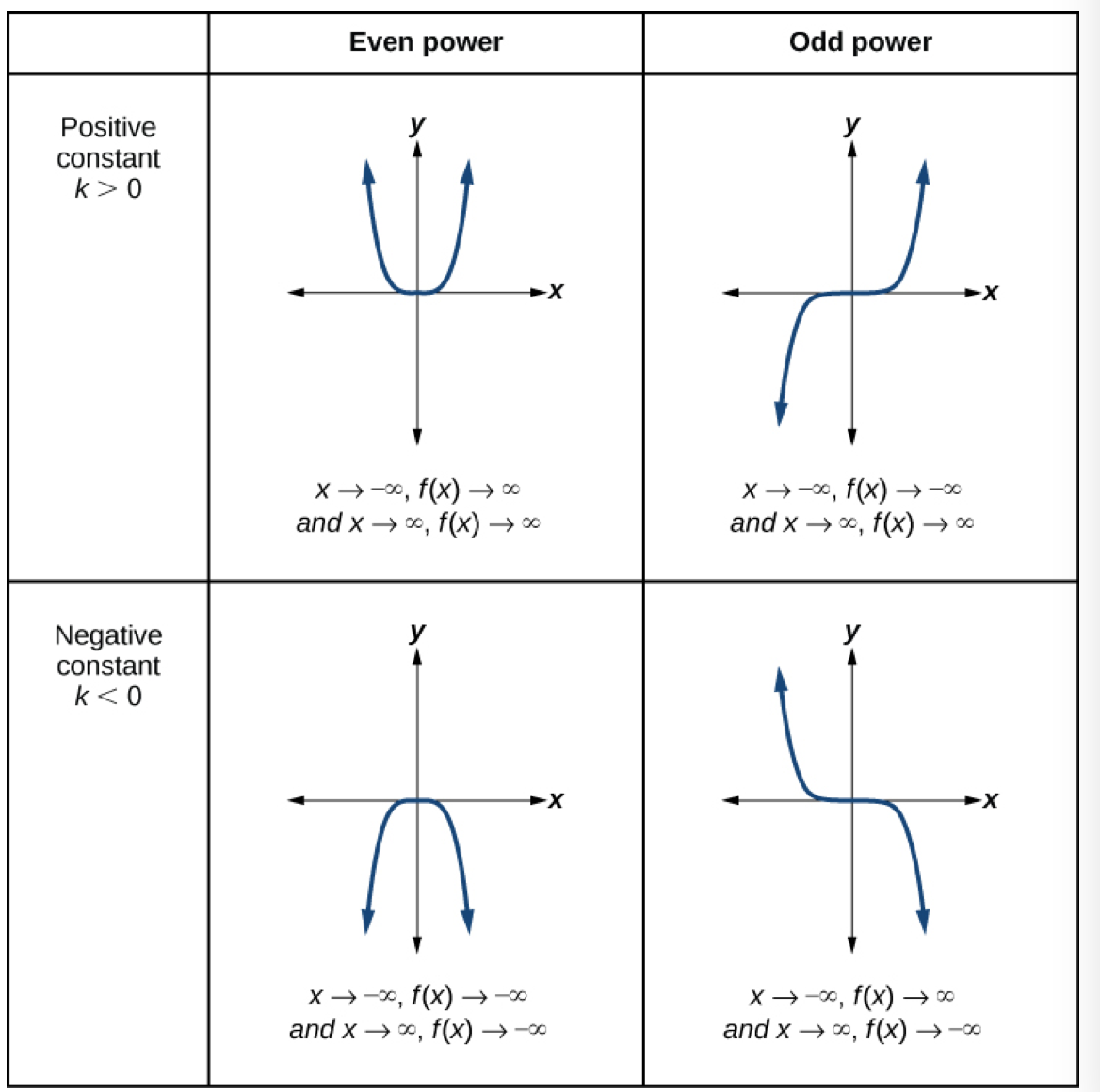
**Examples**

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**Identifying End Behavior of Power Functions**

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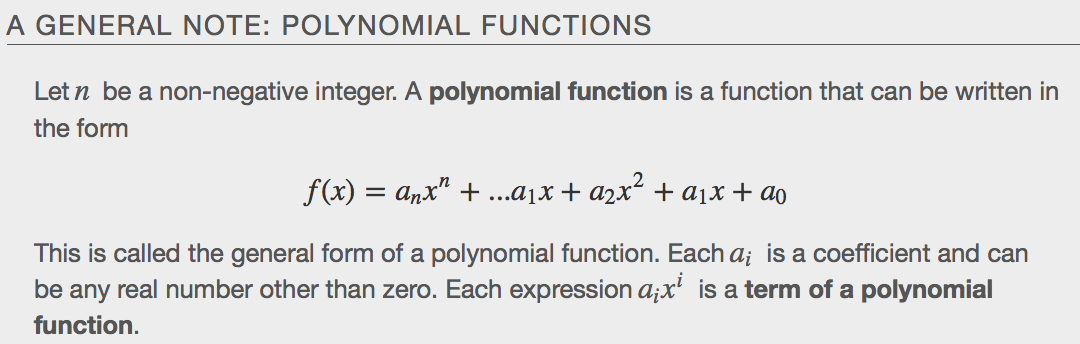
**Examples**

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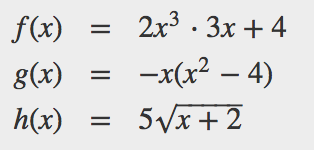
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**Identifying Polynomial Functions**

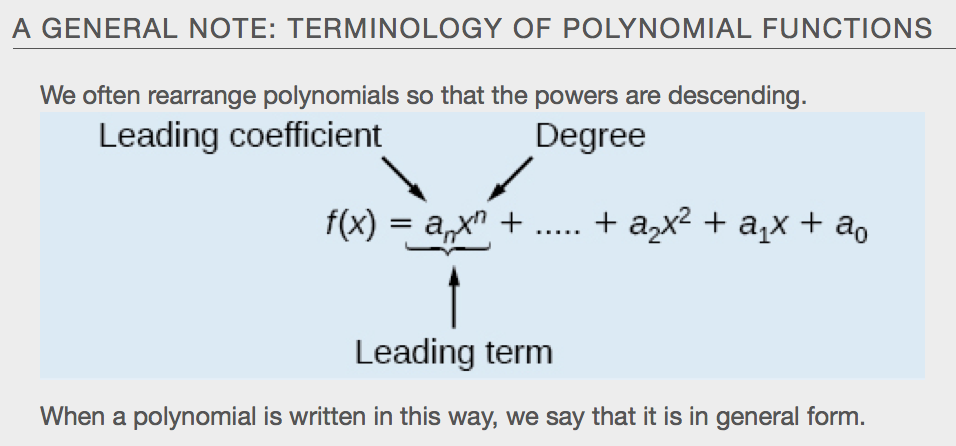
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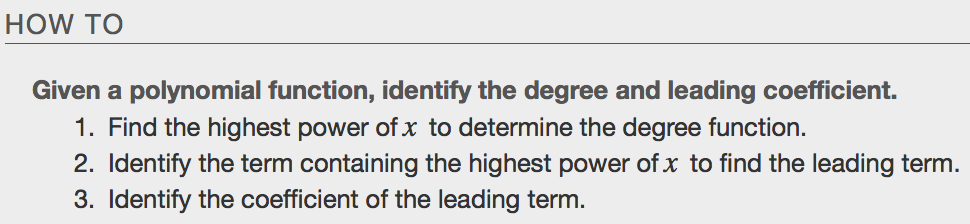
**Example**

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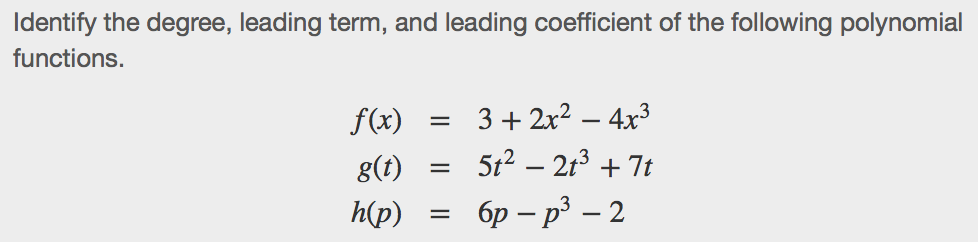
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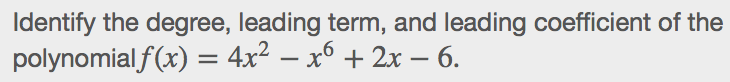
**Identifying the Degree and Leading Coefficient of a Polynomial Function**

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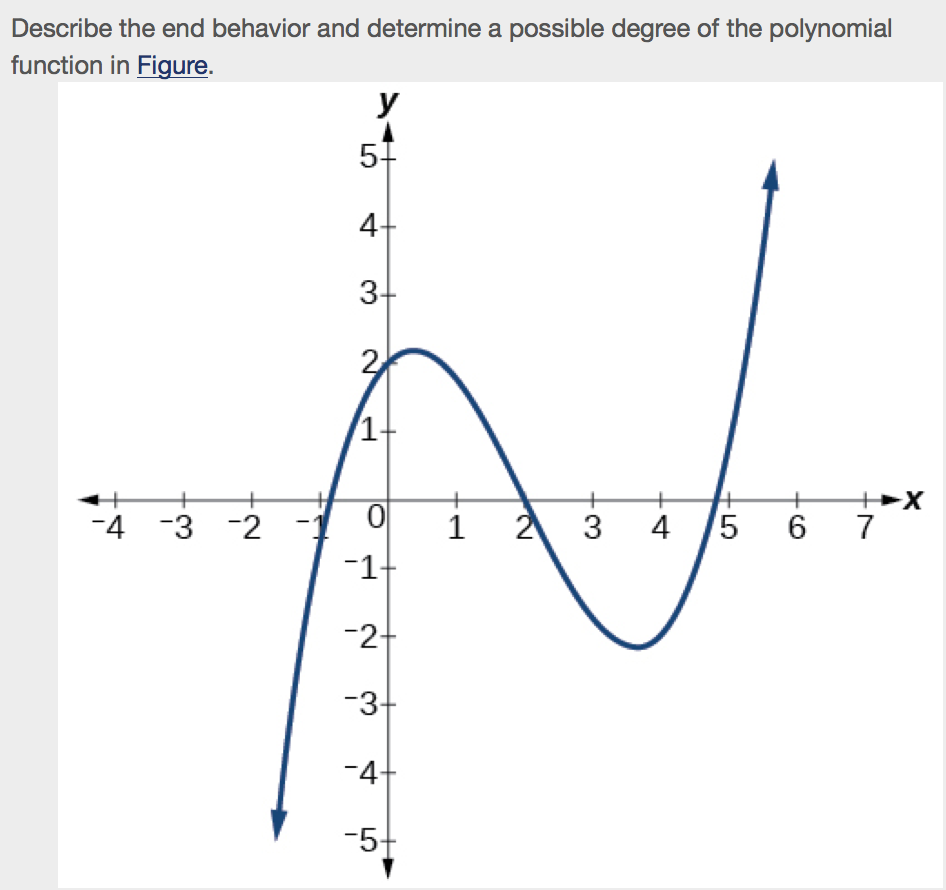
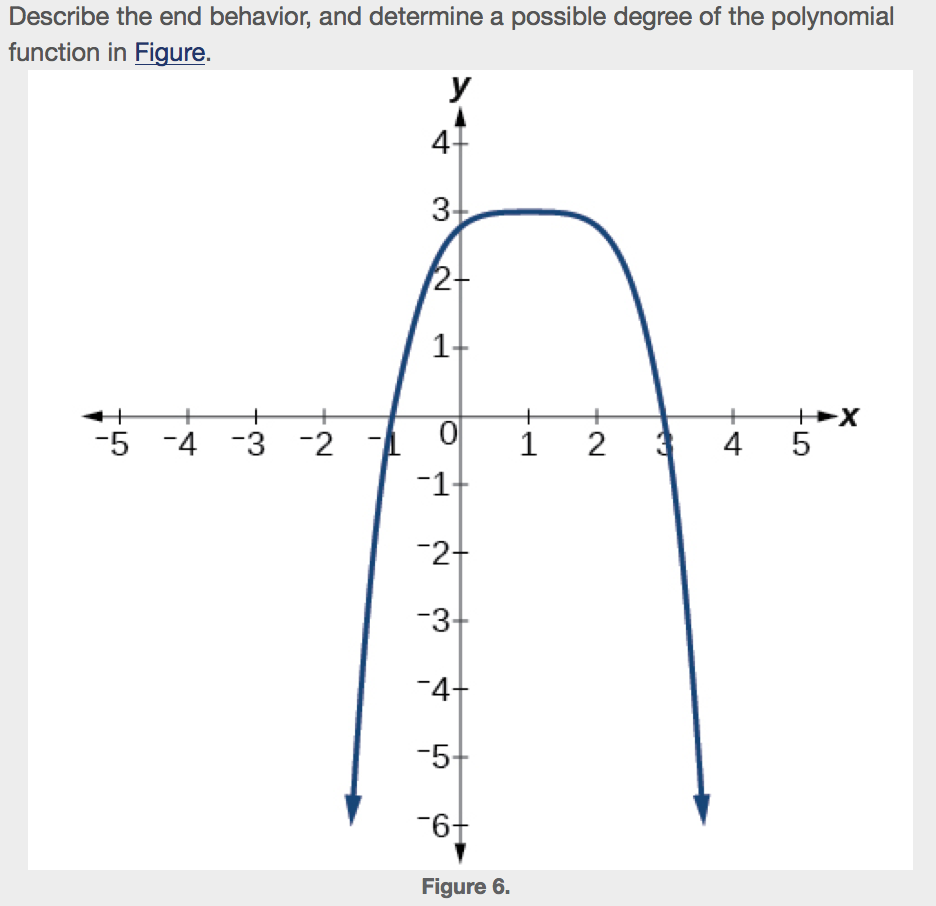
**Examples**

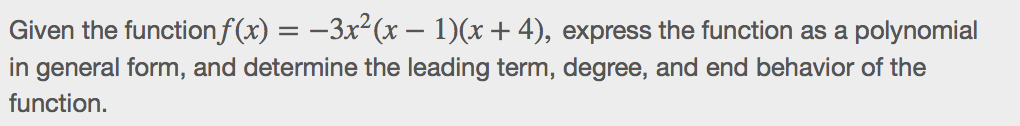
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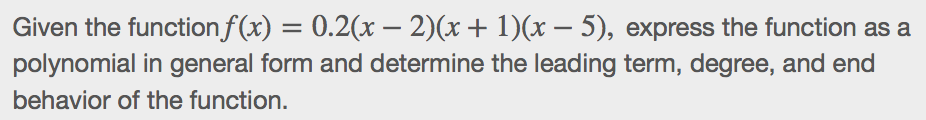
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**Identifying End Behavior of a Polynomial Function**

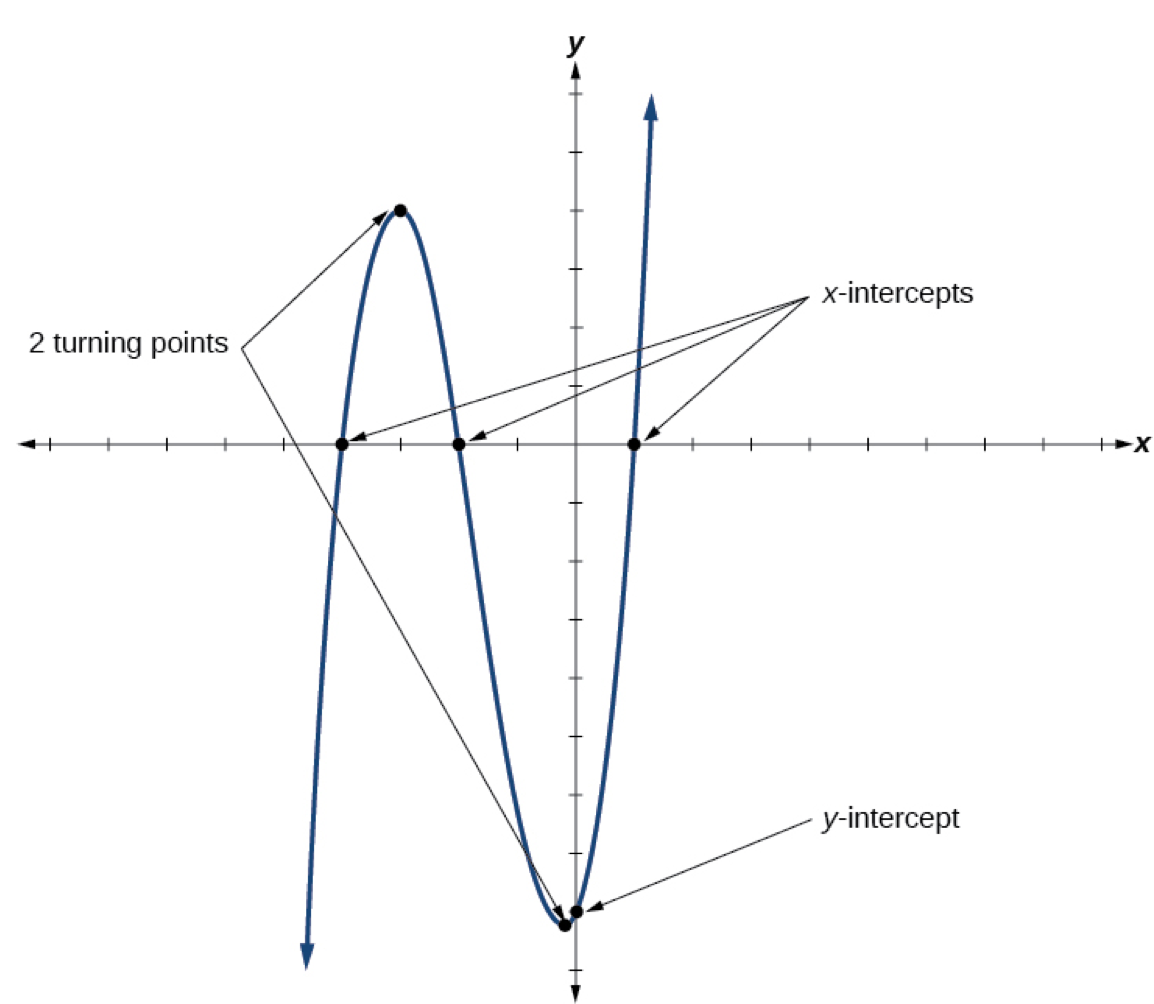
Knowing the degree of a polynomial function is useful in helping us predict its end behavior. To determine its end behavior, look at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ term of the polynomial function. Because the power of the leading term is the highest, that term will grow significantly faster than the other terms as *x* gets very large or very small, so its behavior will dominate the graph. For any polynomial, the end behavior of the polynomial will match the end behavior of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ function consisting of the leading term.

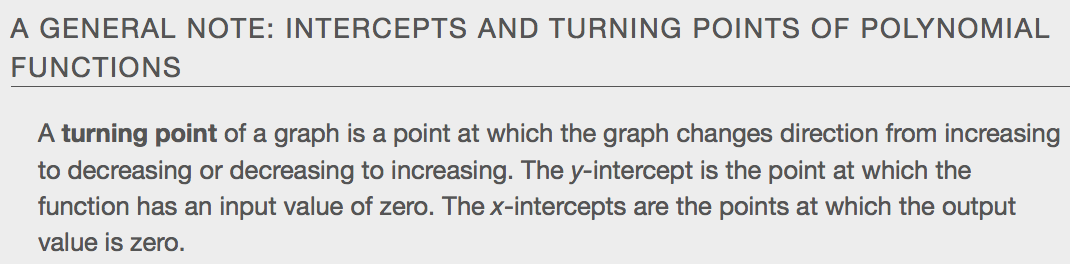
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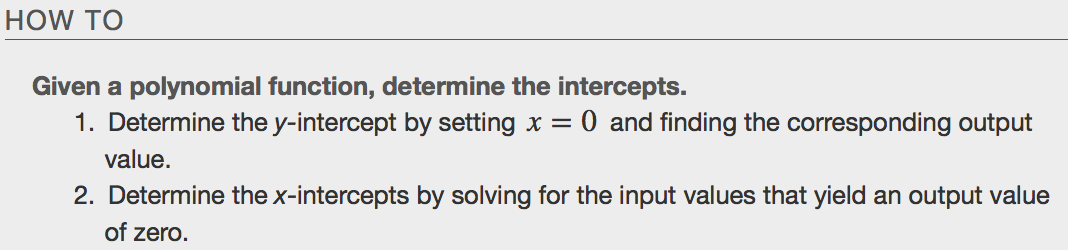
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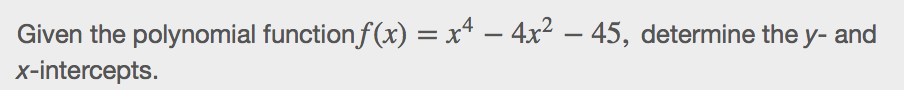
**Identifying Local Behavior of Polynomial Functions**

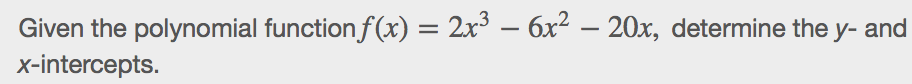
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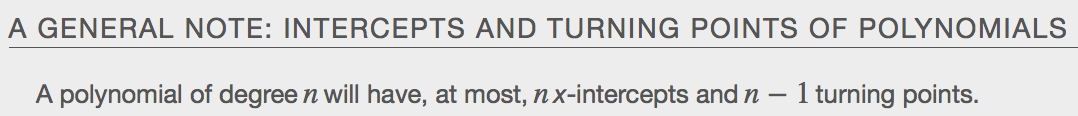
**Examples**

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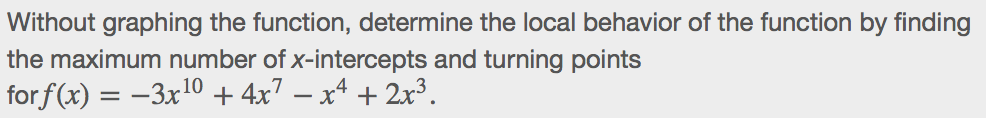
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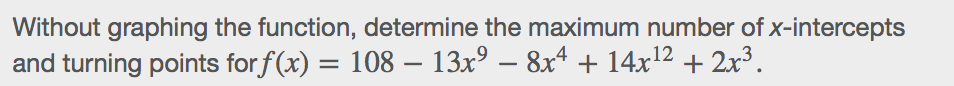
**Comparing Smooth and Continuous Graphs**

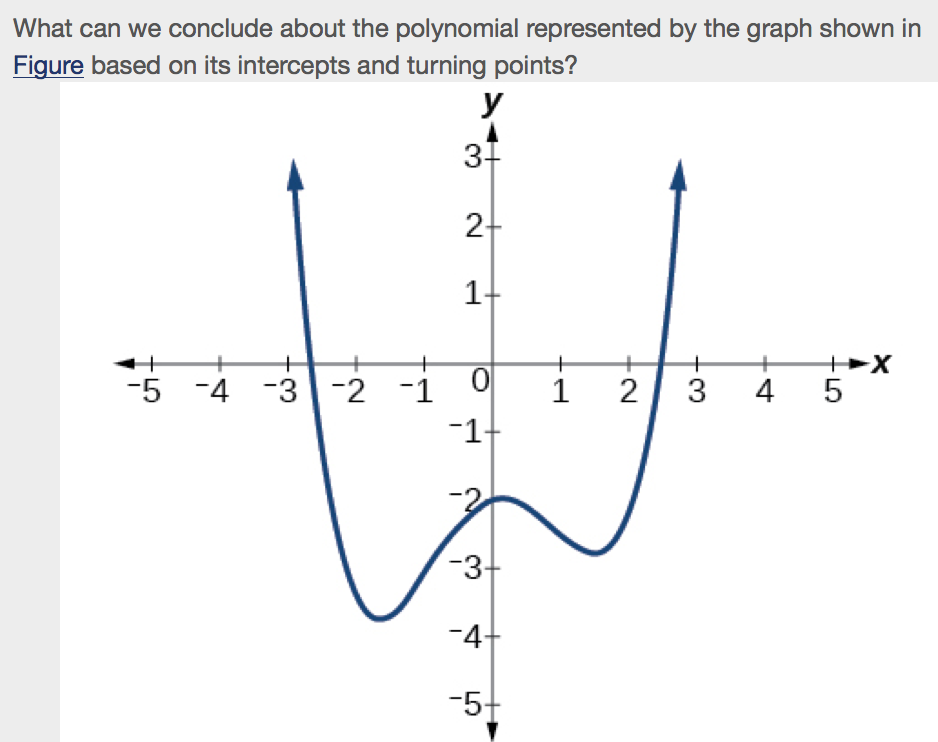
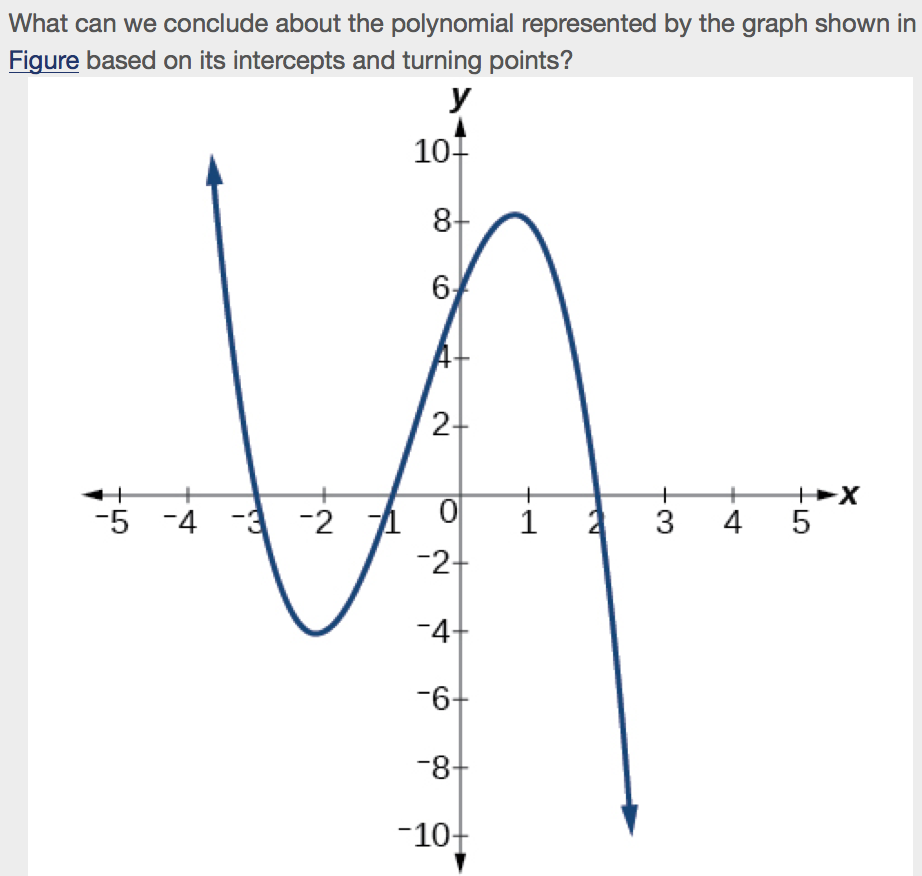
A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ function has no breaks in its graph: the graph can be drawn without lifting the pen from the paper. A smooth curve is a graph that has no sharp \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The turning points of a smooth graph must always occur at rounded curves. The graphs of polynomial functions are both continuous and smooth.

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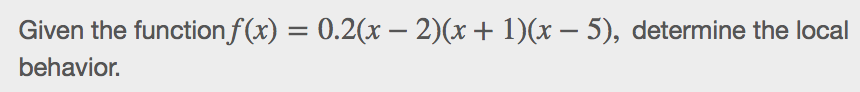
**Examples**

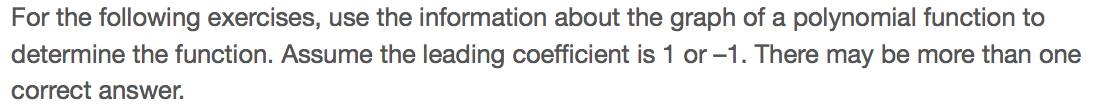
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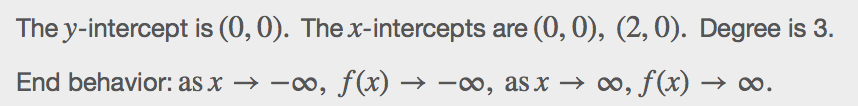
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