**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Analyzing Graphs of**

**Polynomial Functions**

 **Date \_\_\_\_\_\_\_\_\_\_\_\_\_ Block \_\_\_\_\_**

For each polynomial, state the requested information and sketch the graph.

DO NOT USE YOUR CALCULATOR WHEN SKETCHING THE GRAPH!

|  |
| --- |
| 1. f(x) = x(x2 + 2x)(x2 – 3x – 4)
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |
| 1. f(x) = -(x2 – 36)(2x – 5)(x + 6)2
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |
| 1. f(x) = (x + 2)3(x – 3)2(x2 – 49)
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |
| 1. f(x) = (x + 4)4(x + 1)(x – 3)3
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |
| 1. f(x) = -x2(x + 3)(x – 5)(x2 – 9)2
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |
| 1. f(x) = -x(x3 + 2x2)(x2 + 2x – 15)
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |
| 1. f(x) = (x2 – 4)(2x – 1)(x + 5)2
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |
| 1. f(x) = (x + 1)3(x + 4)2(x2 – 25)
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |
| 1. f(x) = -(x + 2)4(x + 5)(x – 6)3
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |
| 1. f(x) = x3(x - 1)(x – 5)(x2 – 16)2
 |
| degree: \_\_\_\_\_\_\_\_\_\_\_even or odd: \_\_\_\_\_\_\_\_\_\_\_max turns: \_\_\_\_\_\_\_\_\_\_\_max x-int: \_\_\_\_\_\_\_\_\_\_\_zeros at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tangent at: \_\_\_\_\_\_\_\_\_\_\_\_ | terrace at: \_\_\_\_\_\_\_\_\_\_as x 🡪 -∞: \_\_\_\_\_\_\_\_\_\_\_\_as x 🡪 +∞: \_\_\_\_\_\_\_\_\_\_\_\_*Estimate the x-coordinates for:*local max(s): \_\_\_\_\_\_\_\_\_\_local min(s): \_\_\_\_\_\_\_\_\_\_ |  |
| *Sign Change Chart:* |

**Sign Charts & the Test Interval Technique**









