**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**









