ZOOM 6!!

Honors Algebra 2 — Graphing Polynomial functions — WS – 3.3

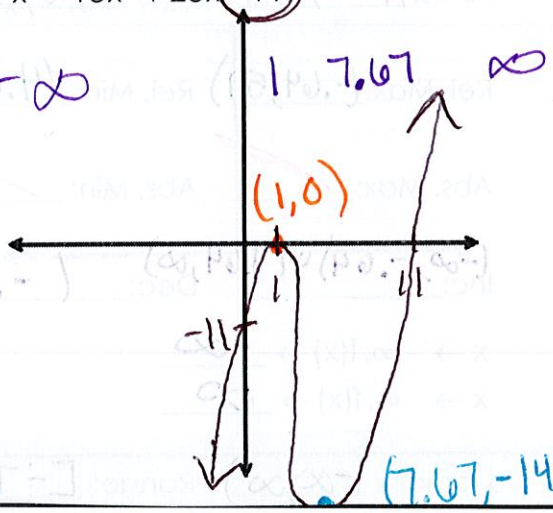
Name: _____ Date: _____

Analyze the following polynomial functions:

1. $f(x) = x^3 - 13x^2 + 23x - 11$

Y= Window 2nd Table Zeros

Max/Min: 2nd Trace



Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

Zeros: $x = 1, 1, 11$ Y-int: $(0, -11)$

Rel. Max: $(1, 0)$ Rel. Min: $(7.67, -148.1)$

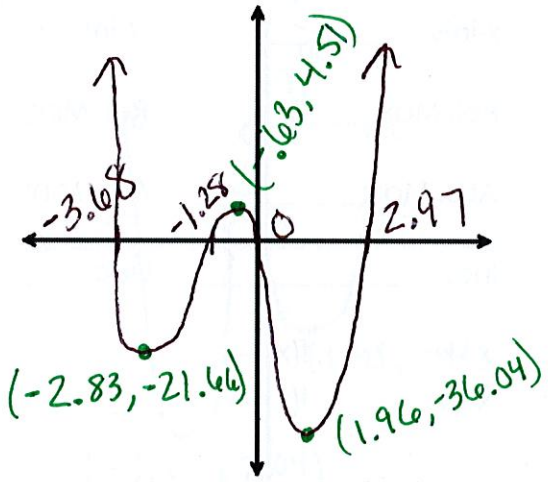
Abs. Max: / Abs. Min: /

Inc: $(-\infty, 1)(7.67, \infty)$ Dec: $(1, 7.67)$

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

$x \to \infty$, $f(x) \to \infty$

2. $f(x) = x^4 + 2x^3 - 10x^2 - 14x$



Domain: $(-\infty, \infty)$ Range: $[-36.04, \infty)$

Roots: $x = -3.68, -1.28, 0, 2.97$ Y-int: $(0, 0)$

Rel. Max: $(-.63, 4.51)$ Rel. Min: $(-2.83, -21.66)$ $(1.96, -36.04)$

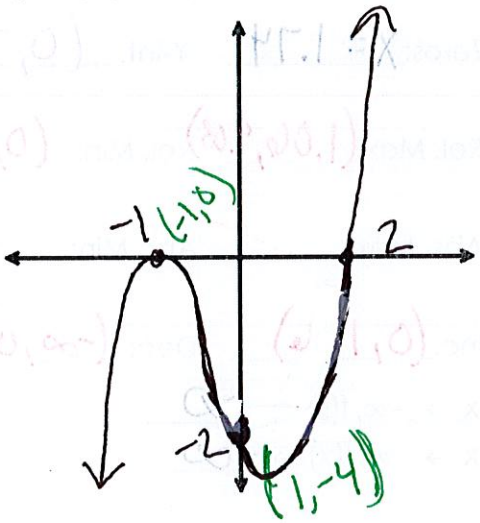
Abs. Max: n/a Abs. Min: $(1.96, -36.04)$

Inc: $(-2.83, -.63) \cup (1.96, \infty)$ Dec: $(-\infty, -2.83) \cup (-.63, 1.96)$

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

$x \to \infty$, $f(x) \to \infty$

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



Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

X-int Zeros: $(-1,0)(-1,0)(2,0)$ Y-int: $(0, -2)$

Rel. Max: $(-1, 0)$ Rel. Min: $(1, -4)$

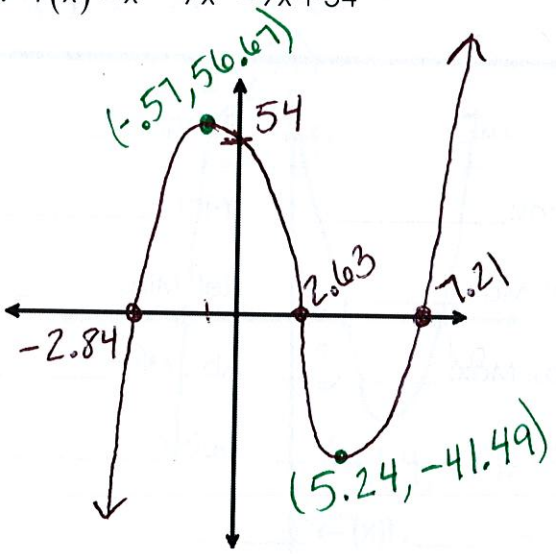
Abs. Max: / Abs. Min: /

Inc: $(-\infty, -1)(1, \infty)$ Dec: $(-1, 1)$

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

$x \to \infty$, $f(x) \to \infty$

4. $f(x) = x^3 - 7x^2 - 9x + 54$



Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

Solutions: $x = -2.84, 2.63, 7.21$ Y-int: $(0, 54)$

Rel. Max: $(-.57, 56.67)$ Rel. Min: $(5.24, -41.49)$

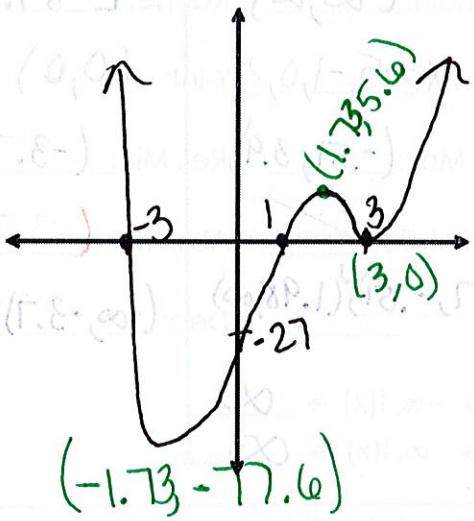
Abs. Max: ____ Abs. Min: ____

Inc: $(-\infty, -.57) \cup (5.24, \infty)$ Dec: $(-.57, 5.24)$

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

$x \to \infty$, $f(x) \to \infty$

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



Domain: $(-\infty, \infty)$ Range: $[-77.6, \infty)$

Zeros: $x = -3, 3, 3, 1$ Y-int: $(0, -27)$

Rel. Max: $(-1.73, 5.6)$ Rel. Min: $(3,0)$ $(-1.73, -77.6)$

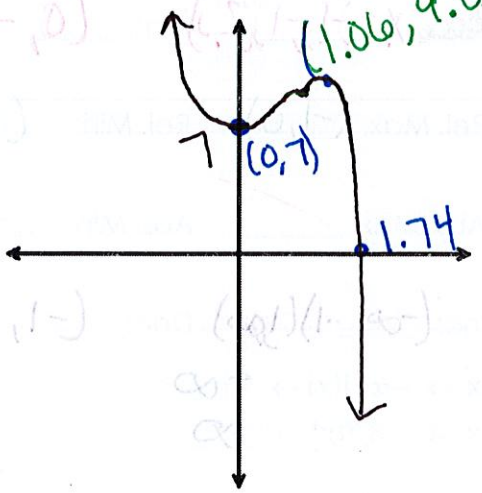
Abs. Max: ____ Abs. Min: $(-1.7, -77.6)$

Inc: $(-1.7, 1.7) \cup (3, \infty)$ Dec: $(-\infty, -1.7) \cup (1.7, 3)$

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

$x \to \infty$, $f(x) \to \infty$

6. $f(x) = -x^5 + 3x^2 + 7$



Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

Zeros: $x = 1.74$ Y-int: $(0, 7)$

Rel. Max: $(1.06, 9.03)$ Rel. Min: $(0, 7)$

Abs. Max: ____ Abs. Min: ____

Inc: $(0, 1.06)$ Dec: $(-\infty, 0) \cup (1.06, \infty)$

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

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