

Unit 2 Polynomials: Review – Characteristics of Polynomials

Identify the characteristics for the following polynomials:

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

Standard form $f(x) = -2x^4 - x^3 + x + 3$ Leading Coefficient -2 Degree 4

of Zeros 4 Classify by degree Quartic Classify by # of terms Polynomial

End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$ # of Turns 3

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

Standard form $f(x) = x^2 + 3x - 5$ Leading Coefficient 1 Degree 2

of Zeros 2 Classify by degree Quadratic Classify by # of terms Trinomial

End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow +\infty$ # of Turns 1

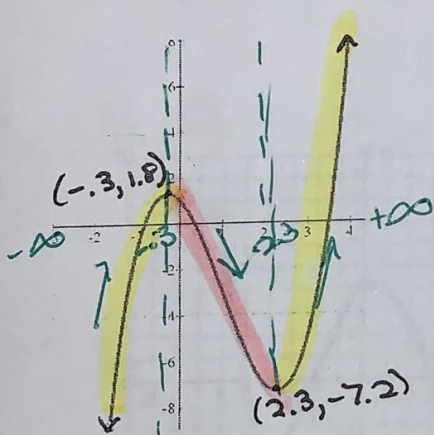
3. $f(x) = 4x$

Standard form $f(x) = 4x$ Leading Coefficient 4 Degree 1

of Zeros 1 Classify by degree Linear Classify by # of terms Monomial

End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$ # of Turns 0

4.



Domain $(-\infty, \infty)$ Absolute Maximum none

Range $(-\infty, \infty)$ Absolute Minimum none

Zero(s) $(-1, 0)$, $(1.5, 0)$, $(3.5, 0)$ Int. of Increasing $(-\infty, -0.3)$, $(2.3, +\infty)$

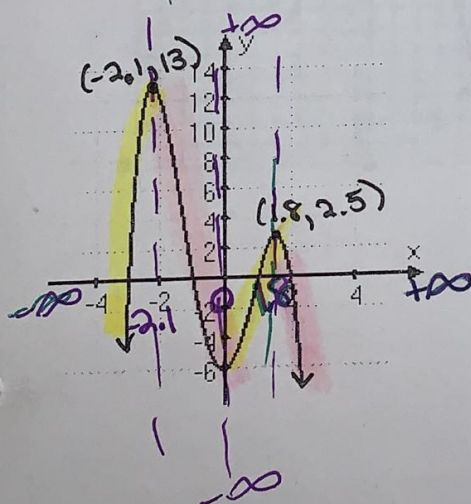
Y-intercept $(0, 1.5)$ Int. of Decreasing $(-0.3, 2.3)$

of Extrema 2 End Behavior:

Relative Maximum $(-0.3, 1.8)$ or 1.8 as $x \rightarrow +\infty$, $f(x) \rightarrow +\infty$

Relative Minimum $(2.3, -7.2)$ or -7.2 as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$

5.



Domain $(-\infty, \infty)$ Absolute Maximum $(-2.1, 13)$ or 13

Range $(-\infty, 13]$ Absolute Minimum none

Zero(s) $(-3, 0)$, $(-1, 0)$, $(1, 0)$, $(2, 0)$ Int. of Increasing $(-\infty, -2.1) \cup (0, 1.8)$

Y-intercept $(0, -6)$ Int. of Decreasing $(-2.1, 0) \cup (1.8, +\infty)$

of Extrema 3 End Behavior:

Relative Maximum $13 + 2.5$ or $(-2.1, 13)$, $(1.8, 2.5)$ as $x \rightarrow +\infty$, $f(x) \rightarrow -\infty$

Relative Minimum $(0, -6)$ or -6 as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$