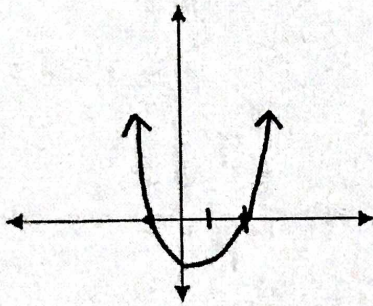


U2 Day 7 Review Graphing Polynomials

I. Sketch the following polynomials on the axis provided. Find all the zeros for each polynomial, indicate any multiplicities other than 1, and determine end behavior.

1) $f(x) = (x+1)(x-2)$

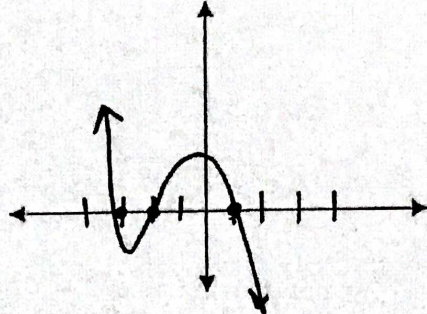


Leading term $\frac{X^2 \oplus \text{even}}{x \rightarrow \infty \ y \rightarrow \infty}$
 End Behavior: $\frac{x \rightarrow -\infty \ y \rightarrow \infty$

Zeros: $(-1, 0)$ $(2, 0)$

mult: 1 each

2) $g(x) = -(x+3)(x+2)(x-1)$

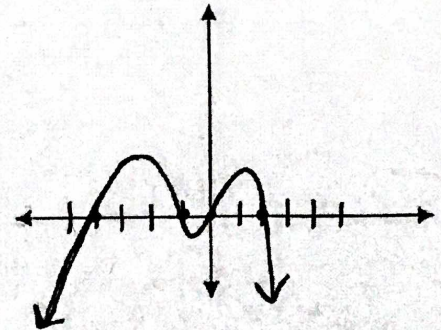


Leading term $\frac{-X^3 \ominus \text{odd}}{x \rightarrow \infty \ y \rightarrow -\infty}$
 End Behavior: $\frac{x \rightarrow -\infty \ y \rightarrow \infty$

Zeros: $x = -3, -2, 1$

mult: 1 each

3) $h(x) = -x(x-2)(x+4)(x+1)$

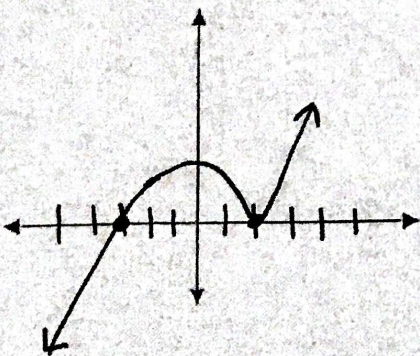


Leading term $\frac{-X^4 \ominus \text{even}}{x \rightarrow \infty \ y \rightarrow -\infty}$
 End Behavior: $\frac{x \rightarrow -\infty \ y \rightarrow -\infty$

Zeros: $(0, 0)$ $(2, 0)$ $(-4, 0)$ $(-1, 0)$

mult: 1 for each

4) $p(x) = \frac{(x-2)^2(x+3)}{\text{mult } 2 \quad \text{mult } 1}$

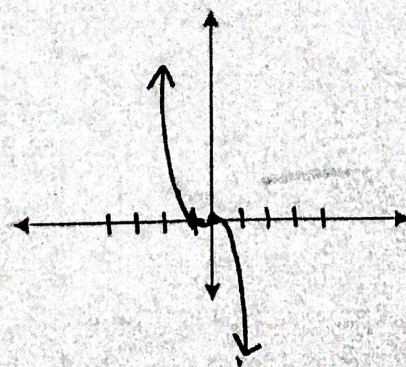


Leading term $\frac{X^3 \oplus \text{odd}}{x \rightarrow \infty \ y \rightarrow \infty}$
 End Behavior: $\frac{x \rightarrow -\infty \ y \rightarrow -\infty$

Zeros: $(-3, 0)$ $(2, 0)$

mult: mult 1 mult 2

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

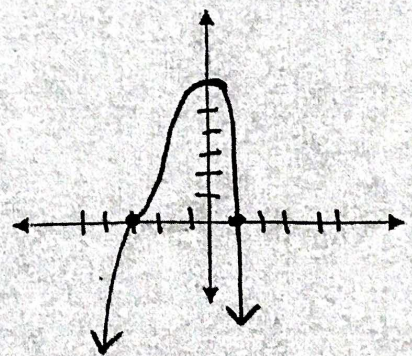


Leading term $\frac{-3X^5 \ominus \text{odd}}{x \rightarrow \infty \ y \rightarrow -\infty}$
 End Behavior: $\frac{x \rightarrow -\infty \ y \rightarrow \infty$

Zeros: $(-1, 0)$ $(0, 0)$

mult: mult 3 mult 2

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

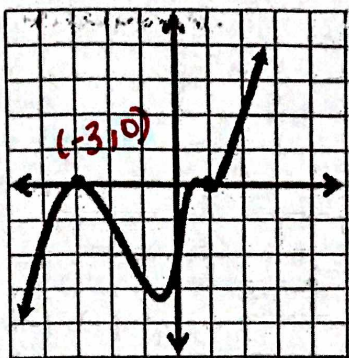


Leading term $\frac{-X^6 \ominus \text{even}}{x \rightarrow \infty \ y \rightarrow -\infty}$
 End Behavior: $\frac{x \rightarrow -\infty \ y \rightarrow -\infty$

Zeros: $(-3, 0)$ $(1, 0)$

mult: mult 5 mult 1

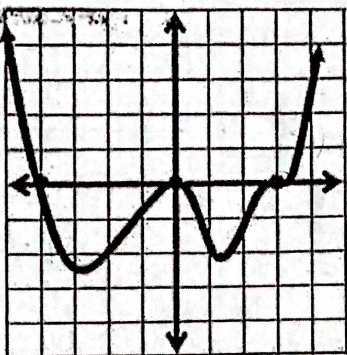
II. Find an equation for the following polynomials. (Factored form.)



5th degree

$$y = (x+3)^2(x-1)^3$$

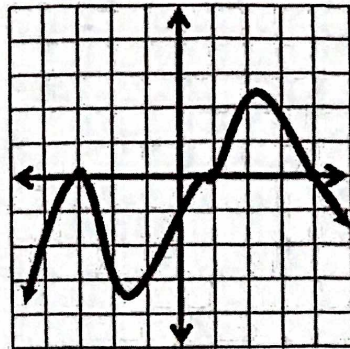
8.



6th degree

$$y = (x+4)x^2(x-3)^3$$

9.



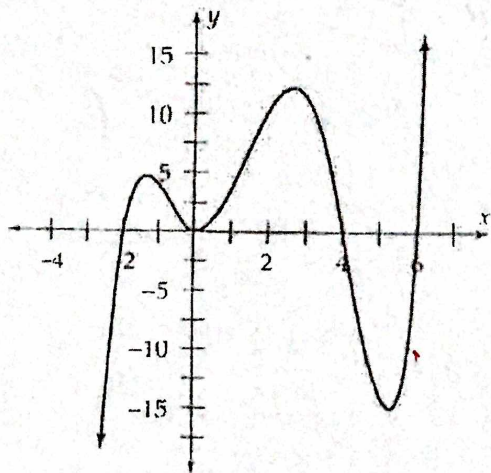
8th degree

$$y = -(x+3)^2(x-1)^5(x-4)$$

linear factorization

III A complete graph of a polynomial is shown. a) Is the degree even or odd? b) Is the leading coefficient positive or negative? c) What are the real zeros? d) What is the smallest possible degree?

10.



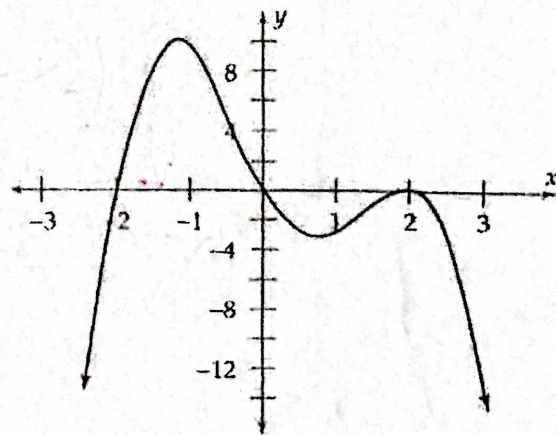
a) odd

b) positive ← mult 2

c) (-2, 0) (0, 0) (4, 0) (6, 0)

d) 5

11.



a) even

b) negative

c) (-2, 0) (0, 0) (2, 0)

d) 4th