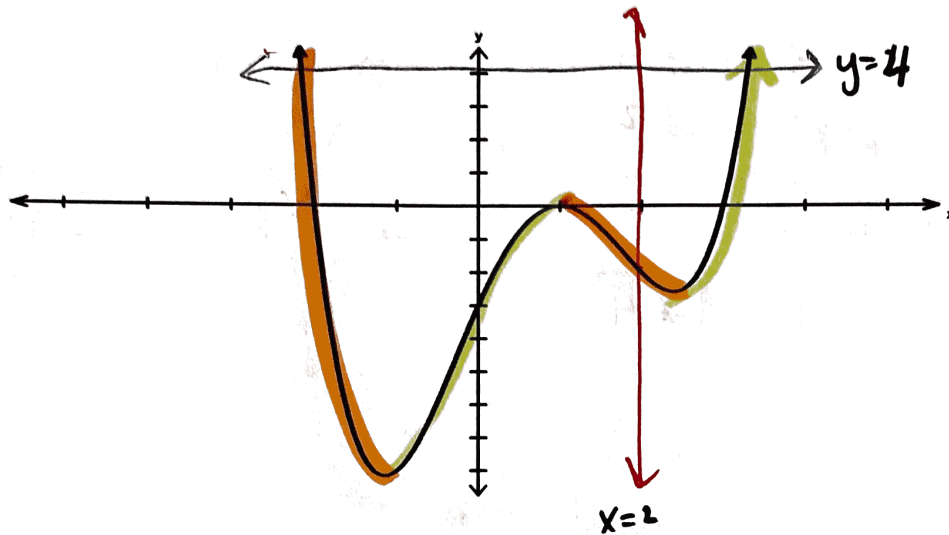


Polynomial Graph Analysis

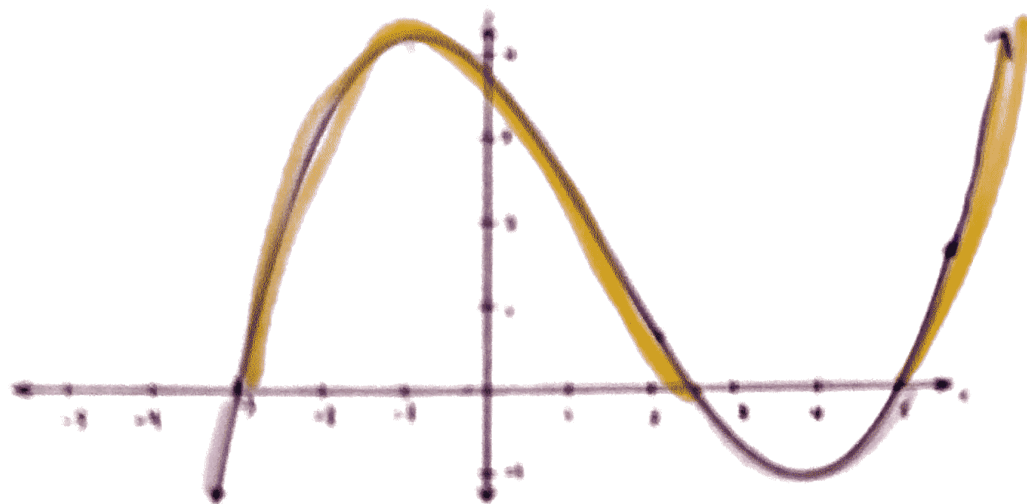
Assume it goes up by ones.



- 1) x-intercept(s)/zeros: $-2, 1, 3$
- 2) y-intercept: -3
- 3) Is the graph a function? *yes*
- 4) Domain (interval notation): $(-\infty, \infty)$
- 5) Range (interval notation): $[-8, \infty)$
- 6) For what x value(s) does $f(x) = 0$? $-2, 1, 3$
- 7) Find $f(2)$. -2.1
- 8) Find $f(-1)$. -8
- 9) Where is the graph increasing (interval notation)? $(-2, 1) (2.5, \infty)$
- 10) Where is the graph decreasing (interval notation)? $(1, 2.5) (-\infty, -1)$
- 11) How many times does the line $x=2$ intersect the graph? 1
- 12) For what approximate x values does $f(x) = 4$? $3.5 -2.2$
 ~~$-2.2 3.5$~~
- 13) Find $f(-1) - f(2)$. $-8 - -2 = -6$
- 14) Find $3f(1)$. $3(0) = 0$
- 15) Describe the end behavior.
As $x \rightarrow \infty$, $f(x) \rightarrow \infty$ As $x \rightarrow -\infty$, $f(x) \rightarrow \infty$
- 16) What is the average rate of change on the interval $(0, 1)$? $(0, -3) (1, 0)$ 3

Key

Polynomial Graph Analysis



1) x-intercept(s):
 $-3, \approx 2.5, 5$

2) y-intercept: ≈ 3.7

3) Is the graph a function?
yes

4) Domain (use interval notation):
 $(-\infty, \infty)$

5) Range (use set builder notation):
 $\{y \mid y \in \mathbb{R}\}$

6) For what x value(s) does $f(x) = 0$?
 $-3, \approx 2.5, 5$

7) Where is $f(x) < 0$?
 $(-\infty, -3) (\approx 2.5, 5)$

8) Where is $f(x) \geq 0$?
 $[-3, 2.5] [5, \infty)$

9) Find $f(2)$.
 ≈ 0.6

10) Find $f(-2)$. ≈ 3.6

11) Where is the graph increasing?
 $(-\infty, -1) + (4, \infty)$

12) Where is the graph decreasing?
 $(-1, 4)$

13) How many times does the line $y = 2$ intersect the graph?
twice pictured, based on error three

14) For what x values does $f(x) = 4$?
 $x \approx -0.6, x \approx -1.7, x \approx 5.5$

15) For what x values does $f(x) = -1$?
 $\approx -3.1, \approx 3.9$

16) Find $f(-1) - f(2)$.
 $4 - 0.6 = 3.5$

17) Find $3f(1)$.
 $3 \cdot 2.5 = 7.5$

18) Describe the end behavior.
As $x \rightarrow \infty, f(x) \rightarrow \infty$
As $x \rightarrow -\infty, f(x) \rightarrow -\infty$

19) List any relative maximums and minimums on the interval $[-3, 5]$

Max 4
Min -1