

4.1 mini lecture

① $6x^5 - 3x^3 + x - 9$

x^5 is positive, so up on right
and down ~~on~~
on the left

② $f(x) = -4(x-3)^3(x+1)^2$

$$x-3=0$$

$x=3$ multiplicity
of 3

$$x+1=0$$

$x=-1$ multiplicity
of 2

③ $f(x) = x^3 + 3x^2 - 16x - 48$

$$x^2(x+3) - 16(x+3)$$

$$(x^2 - 16)(x+3)$$

$$(x+4)(x-4)(x+3)$$

behaves like $y = x^3$

ends: up to Right
down to Left

multiplicity of 1

zeros $\{-4, -3, 4\}$

turning points $(-3.52, 1.88)$
 $(1.52, -61.88)$

y-intercept = -48

Domain: All real #'s
Range:

④ $f(x) = x^3 - 4x^2 + 4x$

$$x(x^2 - 4x + 4)$$

$$x(x-2)(x-2)$$

Zeros $x=0$
 $x=2$

