Math 27, HW #11 Selected Problems

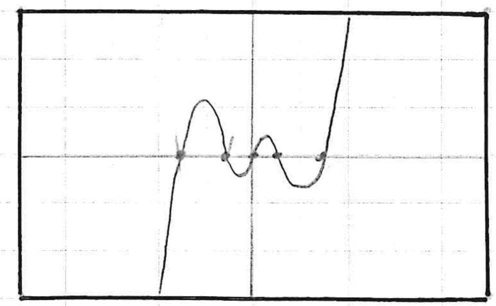
Pg. 110, #34 $f(x) = \dfrac{3x^7 - 2x^5 + 5x^3 + 6x^2}{(-4)}$

Degree = 7 (odd) Leading coefficient = 3/4 (+)

End Behavior: Falls to left and Rises to the right.

Pg. 110, #48 $y = x^5 - 5x^3 + 4x$

a) Solve: $0 = x^5 - 5x^3 + 4x$



$0 = x(x^4 - 5x^2 + 4)$

$0 = x(x^2 - 1)(x^2 - 4)$

Either $\boxed{x=0}$ OR $x^2 - 1 = 0$ OR $x^2 - 4 = 0$

$(x+1)(x-1) = 0$ $x^2 = 4 \Rightarrow \sqrt{x^2} = \pm\sqrt{4}$

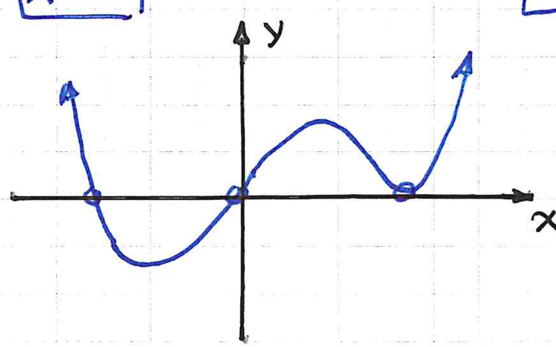
$\boxed{x=-1}$ $\boxed{x=1}$ $\boxed{x = \pm 2}$

Pg. 110, #82

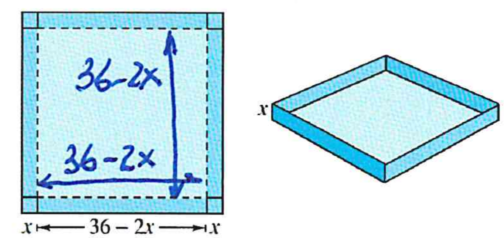
$n = 4$

$a_4 > 0$

3 real zeros



109. Geometry An open box is to be made from a square piece of material 36 centimeters on a side by cutting equal squares with sides of length x from the corners and turning up the sides (see figure).



(a) Verify that the volume of the box is given by the function $V(x) = x(36 - 2x)^2$.

(b) Determine the domain of the function V.

(d) Use the graphing utility to graph V and use the range of dimensions from part (c) to find the x-value for which $V(x)$ is maximum.

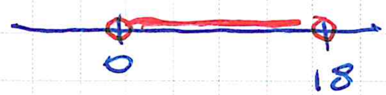
Pg. 111, #109

a) Volume = length x width x height

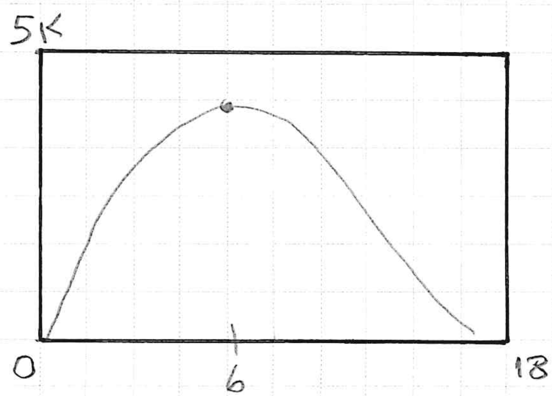
$$= (36-2x)(36-2x)x$$

$$= x(36-2x)^2$$

b) Domain of V: $0 < x < 18$



d)



Max V = 3,456 cm^3

when $\boxed{x = 6 \text{ cm.}}$