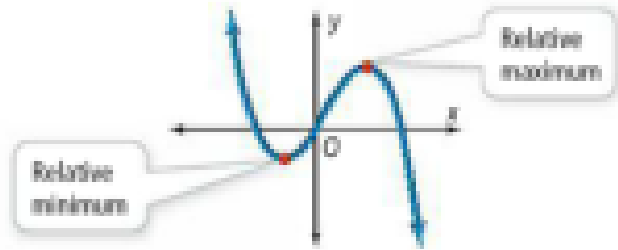
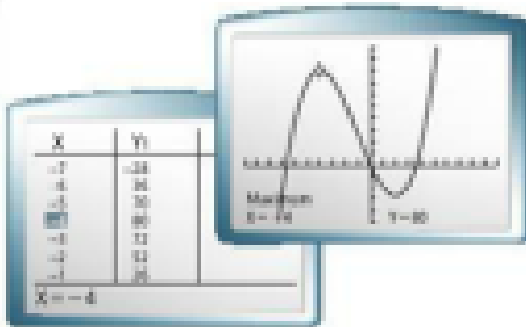


Section 5.2 Algebra 2

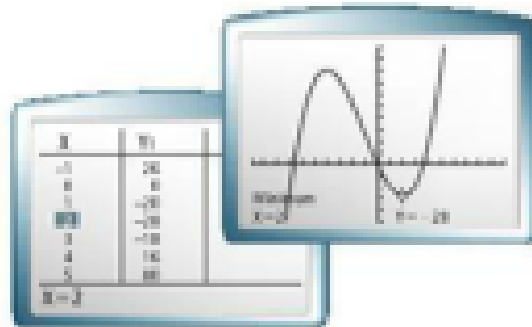
- RELATIVE MAXIMUM
- RELATIVE MINIMUM
- ABSOLUTE MAXIMUM
- ABSOLUTE MINIMUM



Ex. 1 What are the relative maximum and minimum of $f(x) = x^3 + 3x^2 - 24x$?

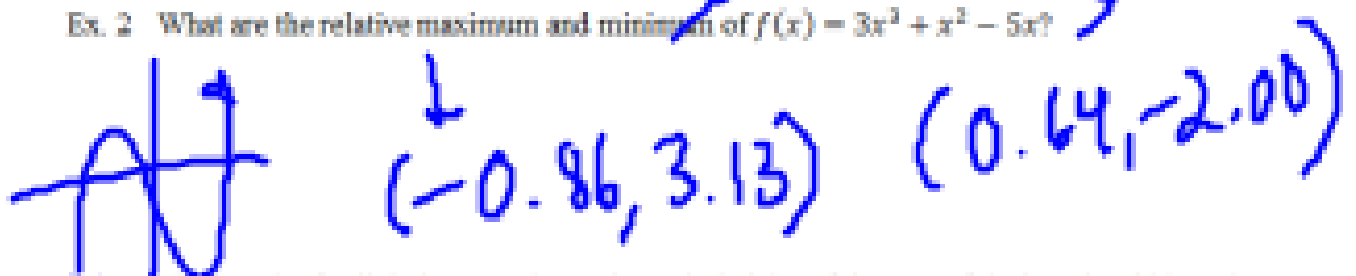


Relative maximum

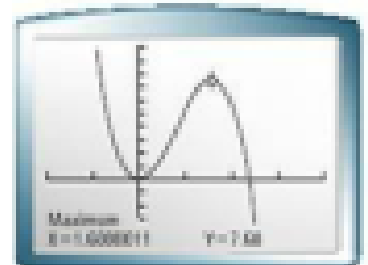


Relative minimum

Ex. 2 What are the relative maximum and minimum of $f(x) = 3x^3 + x^2 - 5x$?



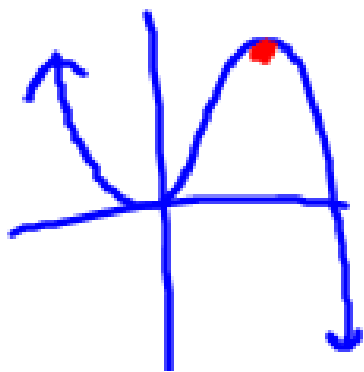
Ex. 3 The length of a digital camera is 1.5 times the height. If the sum of the length, width, and height of the camera must be 6 inches, what dimensions maximize the volume of the camera?



$$V = LWH$$

$$V = 1.5H \cdot W \cdot H$$

$$V = 1.5H(6 - 2.5H)H$$



(1.6, 7.68)

$$L = 1.5H$$

$$L + W + H = 6$$

$$W = 6 - L - H$$

$$W = 6 - 1.5H - H$$

$$W = 6 - 2.5H$$

$$L = 1.5(1.6) = 2.4, H = 1.6$$

$$W = 6 - 2.5(1.6) = 2$$

HOW TO FIND ZEROS WHEN A POLYNOMIAL FUNCTION OF DEGREE 3 OR HIGHER WON'T FACTOR

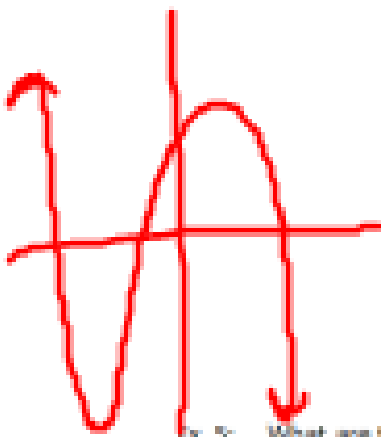
Answer: Use your calculator to find x-intercepts just like with parabolas.

- A. Set equal to 0.
- B. Enter into calculator $y =$.
- C. Find a viewing WINDOW that shows all x-intercepts.
- D. 2nd TRACE "Zero"

Ex. 4: Find all of the zeros of the function below by graphing.

$$y = -2x^3 - 5x^2 + 7x + 6$$

$$x\text{-int} \approx -3.28, -0.64, 1.43$$



Ex. 5: What are three consecutive integers whose product is 480 more than their sum?

$$\text{1st} = x$$

$$\text{2nd} = x + 1$$

$$\text{3rd} = x + 2$$

$$\text{3}x + 3$$

$$x(x+1)(x+2) = 3x + 3 + 480$$

$$x(x+1)(x+2) - 3x - 483 = 0$$

$$x = 7$$

$$7, 8, 9$$

$$\text{product} = 7 \cdot 8 \cdot 9 = 504$$

$$\text{sum} = 7 + 8 + 9 = 24$$

