

5.6-5.9 Practice Quest

- 1) List all of the solutions to the following equation and place them on the line provided below:
 $(5x + 6)(x - 3)(x + 1) = 0$

Solutions: $-\frac{6}{5}, 3, -1$

- 2) Write a polynomial function in standard form that has the lowest degree possible that has (-9) and $(2+i)$ as zeros and place the function on the line provided below.

$$(x+9)(x-(2+i))(x-(2-i))$$

$$(x+9)(x-2-i)(x-2+i)$$

$$x^2 - 2x + xi - 2x + 4 - 2i - ix + 2i - i^2$$

$$(x+9)(x^2 - 4x + 5)$$

$$x^3 - 4x^2 + 5x + 9x^2 - 36x + 45$$

Function: $x^3 + 5x^2 - 31x + 45$

- 3) Find all of the zeros of the function given and write them on the line provided below.

$f(x) = x^4 - x^3 + 2x^2 + 22x - 60$

$2, -3$

$$2 \begin{array}{r|rrrrr} 1 & 1 & -1 & 2 & 22 & -60 \\ & & 2 & 2 & 8 & 60 \\ \hline & 1 & 1 & 4 & 30 & 0 \end{array}$$

$$\frac{2 \pm \sqrt{4 - 40}}{2}$$

$$\frac{2 \pm \sqrt{-36}}{2}$$

$$\frac{2 \pm 6i}{2}$$

Zeros: $2, -3, 1 \pm 3i$

$x^2 - 2x + 10$

$$-3 \begin{array}{r|rrrr} 1 & 1 & 1 & 4 & 30 \\ & & -3 & 6 & -30 \\ \hline & 1 & -2 & 10 & 0 \end{array}$$

- 4) For the 15 years that a computer store has been open, its annual revenue R (in millions of dollars) can be modeled by

$R = -0.0040t^4 + 0.088t^3 - 0.36t^2 - 0.55t + 5.8$

Where t is the number of years since the store opened. In what year was the revenue first greater than \$7 million?

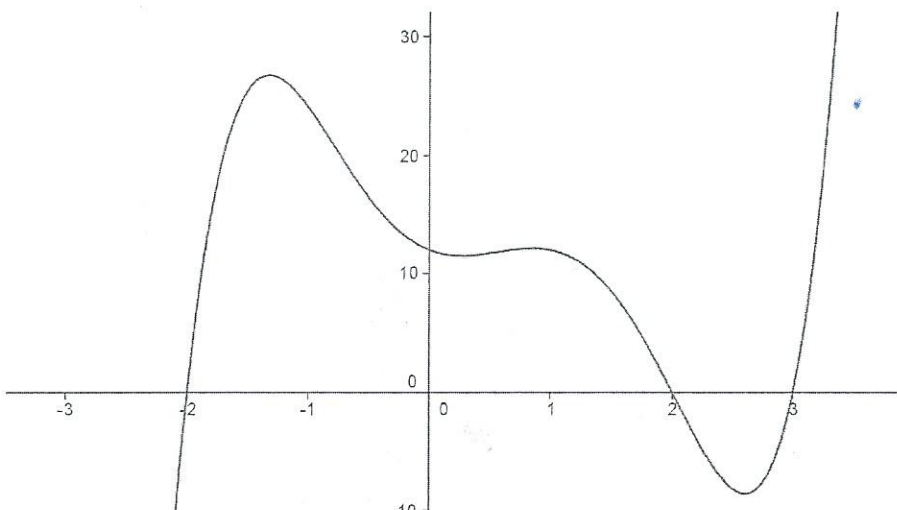
end. of year 7

7.99

5) The graph below is a 5th degree polynomial. Answer the following questions;

a) What are the real zeros of the function? -2, 2, 3

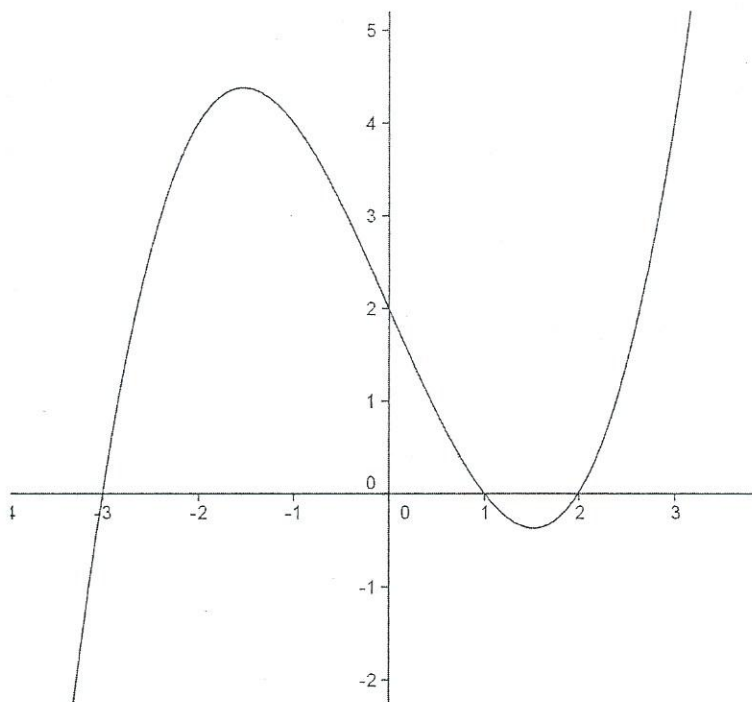
b) How many imaginary zeros are there? 2



6) Write an equation for the polynomial that is graphed below given the fact that it is a 3rd degree polynomial and goes through the point (0,2)

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

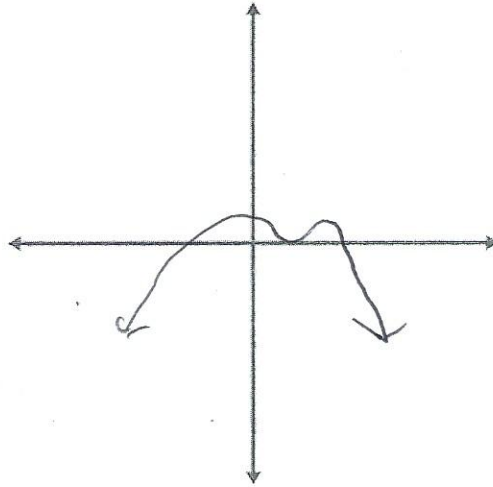
$$2 = a(3)(-1)(-2)$$



Polynomial: $y = \frac{1}{3}(x+3)(x-1)(x-2)$

7) No Calculator

Make a sketch of the following function $f(x) = -2(x-3)(x+2)(x-1)^2$



4th degree
bounce off /
zeros
3, -2, 1

8) Give all of the information you possibly can about the function graphed below

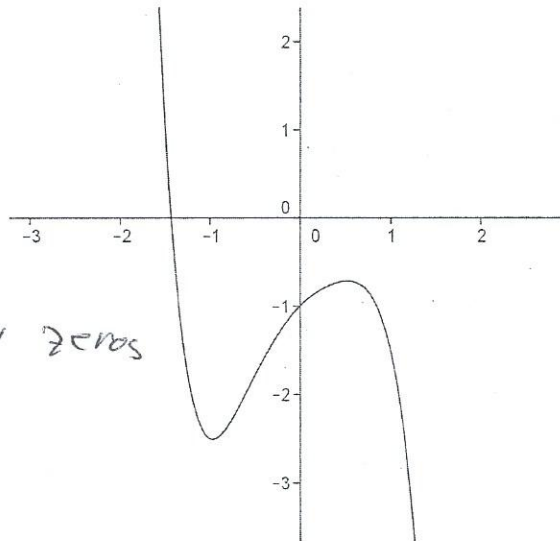
degree: odd

L.C.: neg

1 real zero

at least 2 imaginary zeros

at least deg 3



9) If you knew the graph in problem #8 was a 5th degree polynomial what other details could you give about the number and type of zeros?

1 real zero

4 imaginary