

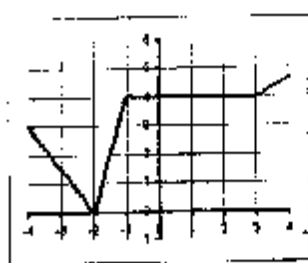
7. (2 pts ea) True or False: Are the following functions polynomials? If true, indicate the degree:

a.) $f(x) = -4x + x^{-9}$ True False degree _____

b.) $g(x) = 4 - \frac{5}{x}$ True False degree _____

c.) $g(x) = \frac{x^2 - 4}{x^4}$ True False degree _____

d.) Graph at right: True False



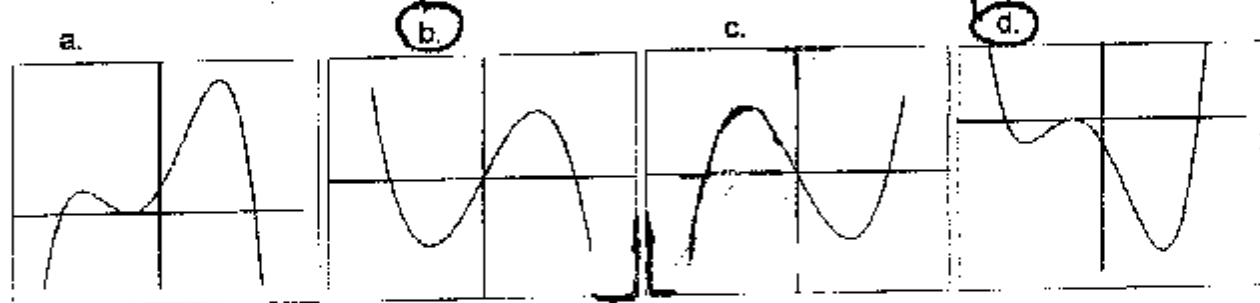
8. (6 pts) Use the Intermediate Value Theorem to determine if the polynomial function $f(x) = 9x^3 - 1$ has a zero in $[-2, 0]$?

Find $f(-2) = -73$ Find $f(0) = -1$ Does a zero exist? Yes No
 NO sign change

9. (3 pts ea) Use the end behavior to draw a line connecting each polynomial with its possible graph.

I.) $f(x) = x - 197x^7$

II.) $g(x) = 15x^{10} + 180x$



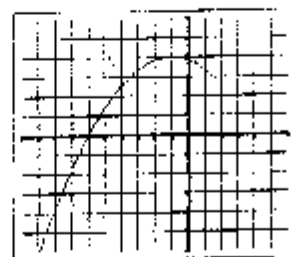
10. (2 pts ea) Given $f(x) = -3(x+3)^2(x-15)(x+15)$:

a.) What are the zeros? -3, 15, -15

b.) At which zero/s does the graph cross the x-axis? 15, -15

c.) Which zero/s cause the graph to touch and turn? -3

11. (6 pts) Use the graph to determine a solution to the equation, $x^3 + 6x^2 - x - 6 = 0$. Use division to verify that this number is a solution and solve the polynomial. (division will give you a second factor)



a.) Solution from graph, $x =$ -6

b.) Remaining solutions, $x =$ ± 1

$$x+6 \overline{) x^3 + 6x^2 - x - 6}$$

so $x^2 - 1$ is a factor whose zero's are ± 1