Chapter 3

Performance Assessment REVIEW

NO GRAPHING CALCULATOR

* Sorry *

Consider the function $f(x) = \frac{1}{4}x^4 - \frac{9}{4}x^2 - x + 3$. Should be $f(x) = \frac{1}{4}x^4 \ldots$

1. Rewrite $f(x)$ as the product of a rational number and a polynomial with integer coefficients.

   $f(x) = \frac{1}{4}(x^4 - 9x^2 - 4x + 12)$

2. List the possible rational zeros of $f(x)$.

   $\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12$

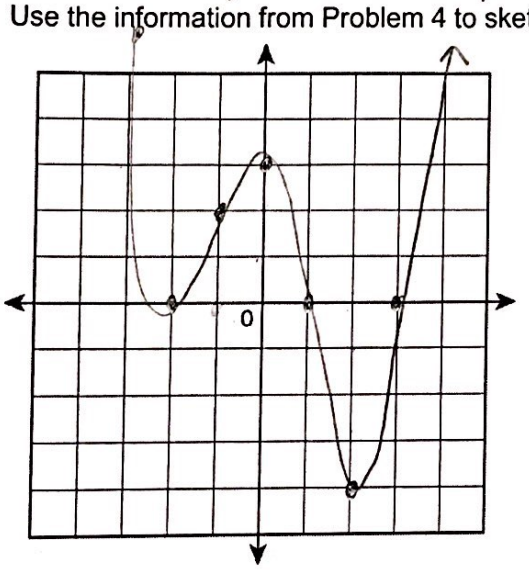
3. Factor $f(x)$. Use synthetic division, if necessary.

   $f(x) = (x-1)(x+2)^2(x-3)$

4. Identify the x-intercepts, the y-intercept, points between the zeros, and end behavior.

   x-int: $1, -2, 3$ y-int: 3, additional points

5. Use the information from Problem 4 to sketch the function.



x	$f(x)$
2	-4
-1	2
-3	6
4	27

(3)

1	1	0	-9	-4	12
		1	1	-8	-12
	1	1	-8	-12	0
-2		-2	2	12	
	1	-1	-6	0	

$x^2 - x - 6$

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