Secondary Math III Honors Module 3 Study Guide Polynomials

Directions: Show all work.			
Identify the following functions a	s linear, exponen	tial, quadratic, cubic,	or logarithmic.
1. 2.	3.	4.	5.
x y 0 1 1 2	x y 1 0 2 1	x y 0 1 1 2	$ \begin{array}{c cc} x & y \\ \hline 0 & 1 \\ \hline 1 & 2 \end{array} $
2 4 3 8	4 2 8 3	2 4 3 7	2 3 3 4
Use the equations below to answ	ver questions 6-9.		
f(x) = x + 1	g(x)	$= x^2 + 2$	$h(x) = x^3 + 3$
6. Find $f(x) + g(x)$		7. Find $f(x) - g(x)$	
8. Find $f(x) \cdot g(x)$		9. Find $f(x)[h(x) +$	<i>g</i> (<i>x</i>)]
Solve for x for questions 10-12.			
$10.\ 9x^2 - 25 = 0$	11. $x^2 + 4x = -$	-3	12. $(x + 4)(x - 3)(x + 1) = 0$
13. Write a polynomial in factore a leading coefficient of 2, and the	d form that has following roots:	14. Write a polynom leading coefficient o	hial in standard form that has a f 2, and the following roots: -1, 2, -
-1, 2, -3.	-	3.	

Use the binomial expansion and Pascal's triangle to solve questions		17. Write a polynomial in factored		
15-16.			form <u>and</u> standard form with a	
15. What is the third term in the	16. What is the sec	ond term in the	leading coefficient of -3, and the	
expansion of $(x + 7)^4$?	expansion of $(2 + 2)$	$(y)^{3}?$	following roots: 4, 2i, and	
For 18-19: Use the Remainder The	eorem to determine	if the following		
are roots of the given polynomial	or not; state the re	mainder.		
18. $(x^3 + 3x^2 - 59x + 30) \div (x)$	$18. (x^3 + 3x^2 - 59x + 30) \div (x - 6)$			
19 $(n^3 + n^2 - 28n + 28) \cdot f(-4)$	1			
$\begin{bmatrix} 13. (n + n & 20n + 20), j(-1) \\ \end{bmatrix}$	•			
For 20-21: Divide the following po	olynomials.			
$20. (3n^3 - 16n^2 + 20n - 4) \div (3n^3 - 16n^2 + 20n - 4))$	3n - 1)	21. $(p^3 + 3p^2 +$	$(2) \div (p+3)$	
Using the rational root theorem, factor the following polynomials completely and state both the real and complex roots.				
22. $y^3 + 0y^2 + 15y + 7 =$. 0	23. $r^4 + 3r$	$c^2 - 40 = 0$	
$\begin{array}{c} x + 9x + 15x + 7 = \\ \end{array}$	· 0		10 - 0	
		•		

Graph the following functions, make sure to label	all points clearly.
24. $f(x) = (x+2)^2(x-3)^2$	
	10
	8-
	6
Degree of function:	4
Even or odd dogroot	2
Even of odd degree:	-10 -8 -6 -4 -2 - 2 4 6 8 10
Positive or negative leading coefficient:	-2
	-4
End Behavior: As $x \to -\infty$, $f(x) \to \dots$.	
As $x \to \infty$, $f(x) \to$	
Roots, including multiplicity:	-10
25. $f(x) = -(x-4)^4(x-1)^2$	
	10
	8-
	6
Degree of function:	4
Even or odd dogroot	2-
	-10 -8 -6 -4 -2 - 2 4 6 8 10
Positive or negative leading coefficient:	-2-
	-4-
End Behavior: As $x \to -\infty$, $f(x) \to .$	-6-
As $x \to \infty$, $f(x) \to$	
Roots, including multiplicity:	-10

2c (1) + (1) + (1)	
26. $f(x) = x(x^2 + 4)$	
	101
	8
	0
	4
Degree of function:	
	2
Even or odd degree:	
	-10 -8 -6 -4 -2 - 2 4 6 8 10
Positive or negative leading coefficient:	
	-4-
End Behavior:	
As $x \to -\infty$, $f(x) \to -\infty$	-0-
As $r \to \infty$ $f(r) \to$	
//o x / oo,j (x) /	
Roots including multiplicity:	
	•
NO CALCULATOR ALLOWED.	
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