Name: _____ Hour: _____ Date: _____

HONORS - Polynomials Unit Test 1 Review Guide

Test Date: Friday, March 16, 2018

DO ALL WORK ON A SEPARATE SHEET OF PAPER

Find the product of the following polynomials. Write the product in standard form, classify the polynomial by degree/number of terms and describe the end behavior.

1) $(x-3)^2(x-1)$

2) $-x^2(x+2)^2$

3) $(-2x^3+3x-1)(x^2+5)$

4) $x^2(x^4-16)$

Use Pascal's Triangle/the binomial theorem to expand the following polynomials.

5) $(x+3)^6$

6) $(y-2)^5$

7) $(a+b)^7$

Factor the following polynomials. ***HINT – Sometimes you only need to factor out a GCF and sometimes you need to factor completely.***

8) $10x^3-3x$

9) $3x^2y-9xy^4$

10) $2x^2y+4x^4y+6x^6y$

11) $3x^4-18x^3+24x^2$

12) x^3-9x

13) $12w^3-64w^2+80$

Determine the zeros of each polynomial. If there are any multiples list them with their multiplicity. Sketch a graph of the function.

14) $y=-(2x+6)(x-2)(x+6)(x-4)$

15) $y=-x(x-2)(x+5)$

16) $y=(x-3)^2(x+1)^3$

17) $y=x^2(x+1)(x-2)^3$

18) $y=x^4-8x^3+16x^2$

19) $y=x^3-6x^2-16x$

Use long division to find the quotient of the following polynomials.

20) $(x^2-3x-40)\div(x+5)$

21) $(3x^2+7x-20)\div(x+4)$

22) $(x^3+3x^2-x+2)\div(x-1)$

23) $(9x^3-18x^2-x+2)\div(3x+1)$

Determine whether each binomial is a factor of $3x^3+10x^2-x-12$. Explain your reasoning using *complete sentences*.

24) $(x+3)$

25) $(x-1)$

26) $(x+2)$

27) $(x-4)$

Use synthetic division to find each quotient.

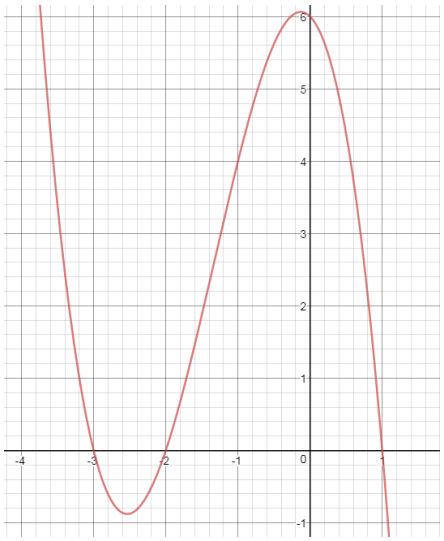
28)$(x^4 - 2x^3 + x^2 + x - 1) \div (x - 1)$

29) $x^4 - 6x^2 - 27) \div (x + 2)$

30) $x^3 + 8x^2 - 8) \div (x + 8)$

Write the equation in factored form of the given graph. Pay attention to multiplicities.

31)



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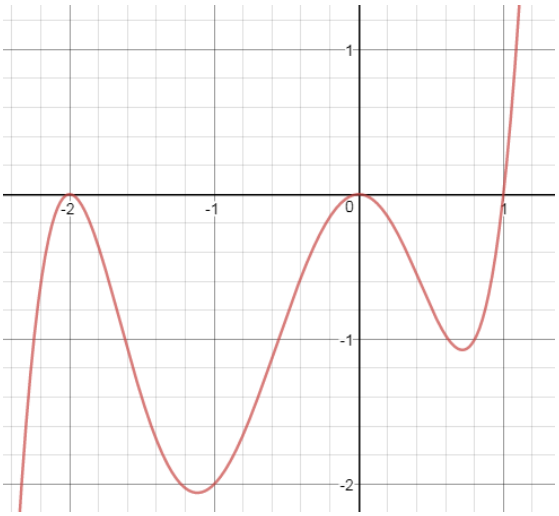

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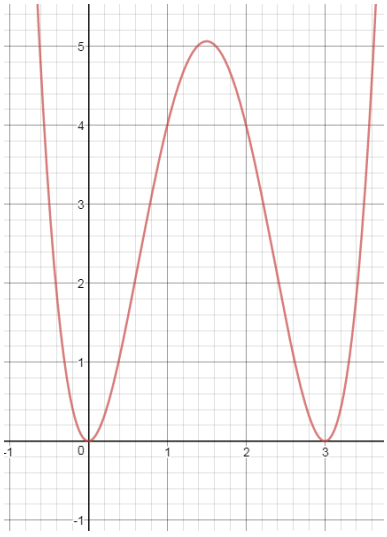

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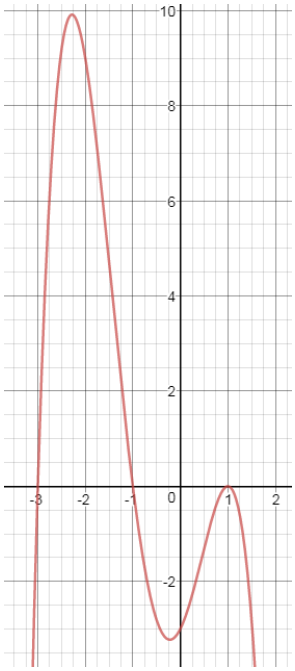

36) *Based on the end behavior*, match each function with its graph. Be able to explain how you made each decision.

$f(x) = x^3 + -4x + 2$
$g(x) = -x^4 + 2x^3 + 2x$
$h(x) = -x^3 + 2x - 1$
$j(x) = x^2 - x + 1$