Algebra 2 Honors Midterm Exam Review

* Simplify Radicals for Complex Numbers (2.4)
1. $\sqrt{-64}$ 2. $\sqrt{-48}$
* Multiplying Complex Numbers (2.4)

3. $(1-2i)(3+5i)$

* End behavior of Polynomial Functions (3.1)

4. What is the end behavior of the graph of $y=3-3x^{4}+x^{2}-2x?$

5. What is the end behavior of the graph of $y=-x-\frac{1}{2}x^{3}+x^{2}?$

* Use Remainder Theorem to find remainder from polynomial long division (3.4)

6. Find the remainder of $2x^{3}+x^{2}-10x+3 divided by x+3$ using the Remainder Theorem

7. Find the remainder of $x^{2}-6x^{3}+1 divided by x-1$ using the Remainder Theorem

* Use polynomial long division (3.4)

8. Divide $3x^{3}-4x^{4}+x-3 by x-2$

* Transformations & Graph of Quadratic Functions (2.1)

Graph and identify the transformations of the quadratic functions

9. $y=-2\left(x-3\right)^{2}+5$ 10. $f\left(x\right)=4\left(x+1\right)^{2}-6$

* Graph Quadratic Functions in Standard Form (2.2)

Graph.

11. $y=-4x^{2}+2x-1$

* Write the Equation of a Parabola (2.1)

Write the equation of the parabola in vertex form given the vertex and a point that it passes.

12. Vertex (-2, 3), Point (1, 5)

* Multiply Polynomials (3.2)

13. $(2x^{3}+3x-1)(4x^{3}-5x+3)$

* Solve linear systems of equations using substitution or elimination (1.6)

Solve the system algebraically.

$$14. \left\{\begin{array}{c}8x-6y=-20\\-16x+7y=30\end{array}\right. 15. \left\{\begin{array}{c}y=4x-9\\2x+3y=1\end{array}\right.$$

* Key features of quadratic functions (2.2)

16. What is maximum or minimum value? Range? $y=-2x^{2}+14x-5$

* Arithmetic Sequences and Series (1.4)

$$17. Evaluate the series \sum\_{x=1}^{45}2x-5$$

18. $Find the 94th term in the sequence 5, 9, 13,…$

* Factor a Quadratic Expression (2.3) or use Identities to Factor (3.3)

19. Factor $5x^{2}+8x-4$ 20. Factor $64x^{2}-49$

* Use factoring to identify the zeros of a quadratic function (2.3)
* Use long division to factor polynomial to determine multiplicities and behavior of a polynomial function (3.5)

21. One of the zeros of $x^{3}+5x^{2}-8x-48 is x=3$. Use long division to factor the polynomial. What are the zeros/multiplicities? How does it behave at each zero?

* Find Vertex of a Quadratic Function in Standard Form (2.2)

22. What is vertex and axis of symmetry of $y=-2x^{2}-8x+1$?

* Solve a Quadratic Equation by Completing the Square (2.5)

Solve by completing the square

23. $x^{2}-2x-1=0$ $24. x^{2}-16x=9$

* Identify the Number of Real-Number Solutions (2.6)

25. How many solutions does $x^{2}=5x+8$ have?

26. How many solutions does $4x^{2}-3x+1=0 have?$

* Solve a Linear-Quadratic System Using Substitution (2.7)

$$27. \left\{\begin{array}{c}y=x^{2}-11x-36\\y=-12x+36\end{array}\right. 28. \left\{\begin{array}{c}y=x^{2}-6x+9\\y+x=5\end{array}\right. $$

* Add and Subtract Polynomials (3.2)

29. $\left(2x^{2}-x+1\right)-(-4x^{2}+x-3)$

* Find the number of roots of a given polynomial

30. $y=-5x^{6}-3x^{2}+1$ 31. $y=2x-x^{7}+8$

* Find all Real and Complex Solutions (3.5)

32. $64x^{3}=8$ 33. $9x^{2}=4$