

Chapter 5 Test Review
Algebra II

Name: _____

In 1-8, evaluate or simplify the expression (no negative exponents or decimals, unless it's scientific notation).

1. $2^2 \cdot 2^5$

2. $(3^2)^{-3}(3^3)$

3. $(x^{-2}y^5)^2$

4. $(3x^4y^{-2})^{-3}$

5. $\left(\frac{2}{5}\right)^{-4} \cdot (ab)^{-2}$

6. $\frac{10^4}{x^{-2}10^6}$

7. $\left(\frac{x^2}{y^{-2}}\right)^{-4}$

8. $\frac{2x^{-6}y^5}{16x^3y^{-2}}$

In 9 and 10, use long division, the box method, or synthetic division to divide the polynomials.

9. $(x^3 - 3x^2 - x - 10) \div (x^2 + 3x - 1)$

10. $(2x^3 - 11x^2 + 13x - 44) \div (x - 5)$

In 11 and 12, given a polynomial $f(x)$ and a factor of $f(x)$, factor $f(x)$ completely.

11. $f(x) = x^3 - 5x^2 - 2x + 24 ; x + 2$

12. $f(x) = 2x^3 + 7x^2 - 33x - 18 ; x + 6$

In 13 and 14, given a polynomial, find all zeros. You may use a graphing calculator to obtain ONE zero. Show your work.

13. $f(x) = 9x^3 - 9x^2 - 4x + 4$

14. $f(x) = x^3 - 11x^2 + 14x + 80$

In 15 and 16, write a polynomial function f of least degree that has rational coefficients, a leading coefficient of 1, and the given zeros. Write your answer in standard form.

15. $-4, 1, 5$

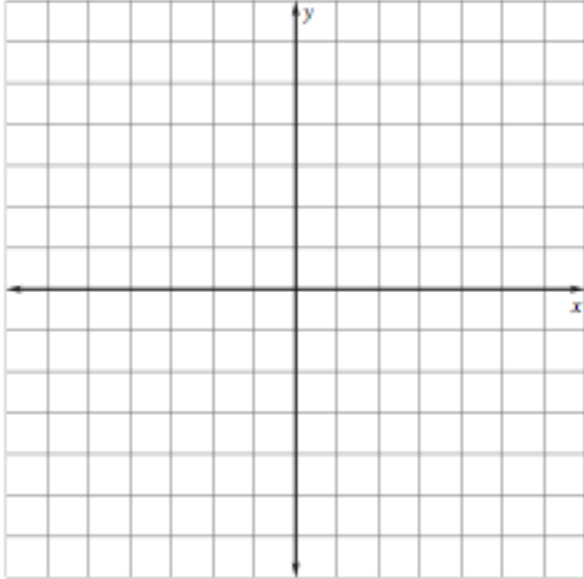
16. $-1, 0, 3i$

17. $f(x) = -2x^3 - 3x^2 - 1$

a.) Evaluate the function for $x = -2, -1, 0, 1, 2$

x	-2	-1	0	1	2
y					

b.) Graph the function.



c.) Describe the end behavior of the graph.

d.) Describe the intervals on which the function is positive and negative.

Positive: _____

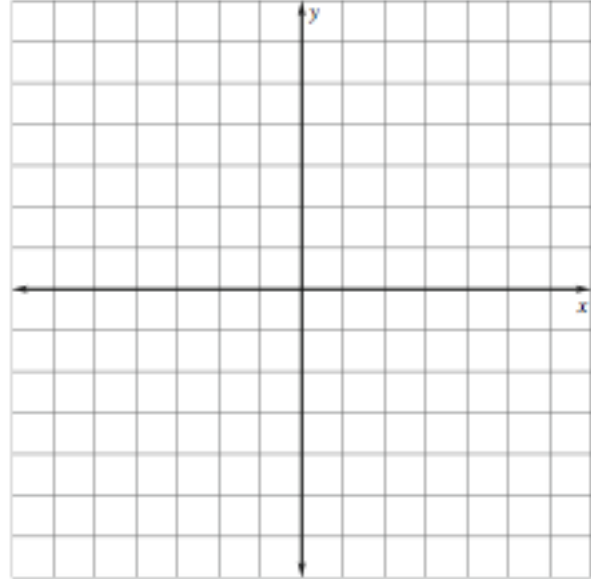
Negative: _____

18. $f(x) = x^4 + 3x^3 - x^2 - 8x + 2$

a.) Evaluate the function for $x = -2, -1, 0, 1, 2$

x	-2	-1	0	1	2
y					

b.) Graph the function.



c.) Describe the end behavior of the graph.

d.) Describe the intervals on which the function is positive and negative.

Positive: _____

Negative: _____

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

a.) Identify the x-intercepts: _____

b.) Identify the local maximum(s): _____

c.) Identify the local minimum(s): _____

d.) Describe the end behavior of the graph: _____

20. Given $g(x) = 3(x - 2)(x + 4)^2(x + 5)$

a.) Identify the x-intercepts: _____

b.) Identify the local maximum(s): _____

c.) Identify the local minimum(s): _____

d.) Describe the end behavior of the graph: _____

21. Use a graphing calculator to approximate the real zeros of $h(x) = -x^4 + 3x^3 - 5x + 1$.

22. Use a graphing calculator to approximate the real zeros of $f(x) = 0.25x^3 - 3x - 1$.