

Name _____ Period _____

Sections 7-1 to 7-4 Review

1. Evaluate $x^4 - 6x^2 + 5$ when $x = -4$. [A] -3 [B] 37 [C] 165 [D] 45

[1] _____

2. Simplify $9x^2 + 2x + 8 + 2x^2 + 7x - 8$.

[A] $7x^2 + 9x + 16$ [B] $7x^2 - 5x + 16$ [C] $11x^2 + 9x$ [D] $11x^2 - 5x$

[2] _____

3. Classify the polynomial by degree and number of terms. Describe the shape of its graph.

$$4x^3 - 6x^2 + 2x - 1$$

- [A] cubic quadrinomial; 'S' shaped with 2 turns
[B] quartic quadrinomial; 'S' shaped with 2 turns
[C] cubic quadrinomial; 'W' shaped with 3 turns
[D] quartic quadrinomial; 'W' shaped with 3 turns

[3] _____

4. Determine the end behavior of the graph of the function $f(x) = -3x^5 - 2x^3 + 5x^2 + 1$.

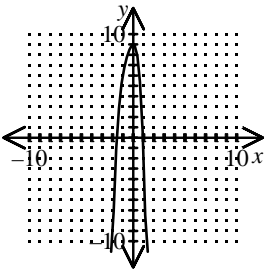
- [A] falls to the left; rises to the right [B] rises to the left; rises to the right
[C] falls to the left; falls to the right [D] rises to the left; falls to the right

[4] _____

5. Graph the function and approximate any local maxima or minima to the nearest tenth. Specify the intervals in which the function is increasing or decreasing.

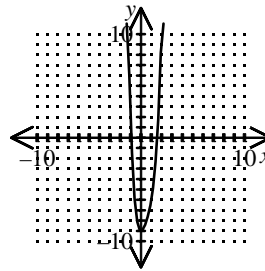
$$P(x) = -2x^4 - 4x^3 + 5x^2 - 9$$

[A]



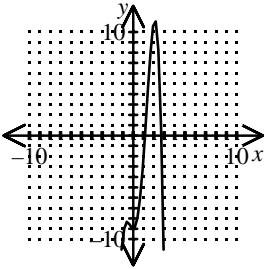
max: ≈ 9.0
 no min
 increasing: $x < 0$
 decreasing: $x > 0$

[B]



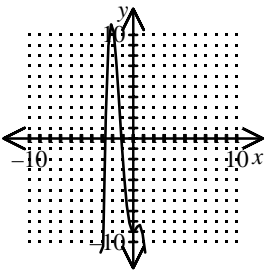
no max
 min: ≈ -9.0
 increasing: $x > 0$
 decreasing: $x < 0$

[C]



max: ≈ 11.2 and ≈ -8.3
 min: ≈ -9.0
 increasing: $x < -0.6$, and $0 < x < 2.1$
 decreasing: $-0.6 < x < 0$, and $x > 2.1$

[D]



max: ≈ 11.2 and ≈ -8.3
 min: ≈ -9.0
 increasing: $0 < x < 0.6$, and $x < -2.1$
 decreasing: $x > 0.6$, and $-2.1 < x < 0$

[5] _____

6. A biologist took a count of the the number of migrating waterfowl at a particular lake, and recounted the lake's population of waterfowl on each of the next six weeks. Find a quadratic function that models the data shown as a function of x , the number of weeks.

Week	0	1	2	3	4	5	6
Population	433	312	273	316	441	648	937

[A] $P(x) = 43x^2 \pm 174x + 433$

[B] $P(x) = 44x^2 \pm 174x + 427$

[C] $P(x) = 41x^2 \pm 162x + 433$

[D] $P(x) = 40x^2 \pm 155x + 427$

[6] _____

7. Divide $x^3 + 2x^2 - 5x + 12 \div x + 4$.

[A] $x^2 - 4x + 3$

[B] $x^2 - 2x + 3$

[C] $x^2 - 2x - 3$

[D] $x^2 + 2x + 3$

[7] _____

8. Write the product as a polynomial in standard form.

$(x + 5)(x - 4)(x - 5)$

[A] $x^3 - 4x^2 + 20x - 20$

[B] $x^3 - 4x^2 - 25x + 100$

[C] $x^3 + 100$

[D] $x^3 - 9x^2 - 25x + 20$

[8] _____

9. For the function, use synthetic division and substitution to determine whether the given value is a zero of the function.

$P(x) = 3x^4 - 17x^3 + 9x^2 + 41x + 12, P(-1)$

[9] _____

10. Use substitution to determine whether $3x + 8$ is a factor of $3x^4 - 10x^3 - 56x^2 + 160x + 128$.

[10] _____

11. Use a graph, synthetic division, substitution, and factoring to solve the equation.

$$x^3 - 2x^2 - 24x = 0$$

[A] 0, 4, 6

[B] 0, -4, 6

[C] 0, 4, -6

[D] 0, -4, -6

[11] _____

12. Find the real zeros of the function. Give approximate values to the nearest hundredth, if necessary.

$$f(x) = x^4 + 5x^3 + 4x^2 - 10x - 12$$

[A] -2, -3, ± 1.41

[B] 2, -3, ± 1.51

[C] -2, 3, ± 1.51 , ± -1.41

[D] 2, 3, ± 1.41 , ± -1.51

[12] _____