

Algebra II: Mid-Chapter 5 Review (5.1-5.4)

Short Answer

1. Classify the polynomial by degree and number of terms.

$$-3$$

Degree: _____

of Terms: _____

2. Classify the polynomial by degree and number of terms.

$$2x^2 - 7x^4 + 9x - 5$$

Degree: _____

of Terms: _____

3. Classify the polynomial by degree and number of terms.

$$7x^3$$

Degree: _____

of Terms: _____

4. Classify the polynomial by degree and number of terms.

$$2x + 7$$

Degree: _____

of Terms: _____

5. Classify the polynomial by degree and number of terms.

$$6x - 4 + 3x^5$$

Degree: _____

of Terms: _____

6. Perform the operation and simplify.

$$(3x + 2) - (x - 4)$$

7. Perform the operation and simplify.

$$6x^7 + 9x^7$$

8. Perform the operation and simplify.

$$(3x^2 + 2x + 8) - (2x + 9)$$

9. Perform the operation and simplify.

$$(-4x^3)(-9x^7)$$

10. Perform the operation and simplify.

$$7x^3(-2x^4 - 9x)$$

11. Perform the operation and simplify.

$$(3x + 5)(3x - 5)$$

12. Perform the operation and simplify.

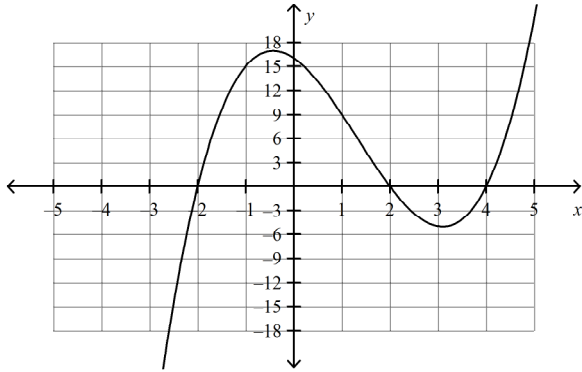
$$(3x - 5)^2$$

13. Perform the operation and simplify.

$$(2x - 7)(-3x^2 - 11x - 4)$$

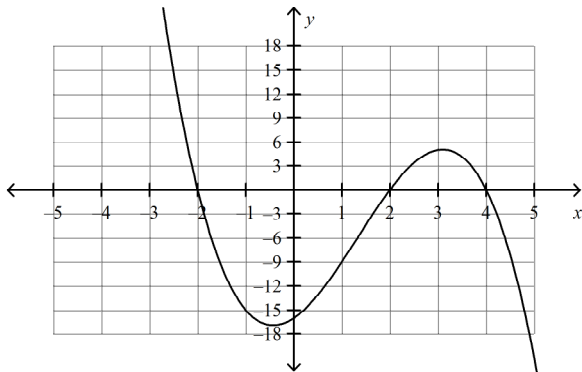
14. Find the *zeros* of the graph below.

Zeros: _____, _____, _____



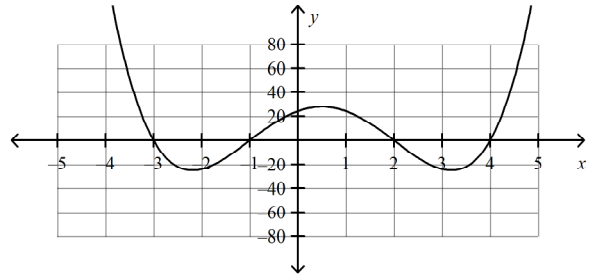
15. State the end behavior of the graph below. Label the end behavior as UP or DOWN.

Left: _____ Right: _____



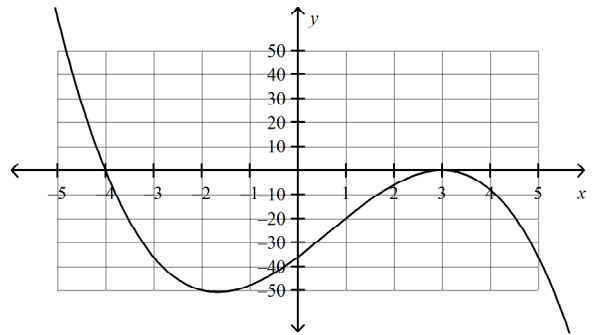
16. Find the *factors* of the graph below.

Factors: _____, _____,
 _____, _____



17. State the *roots* of the graph below. State the *multiplicity* if it is more than 1.

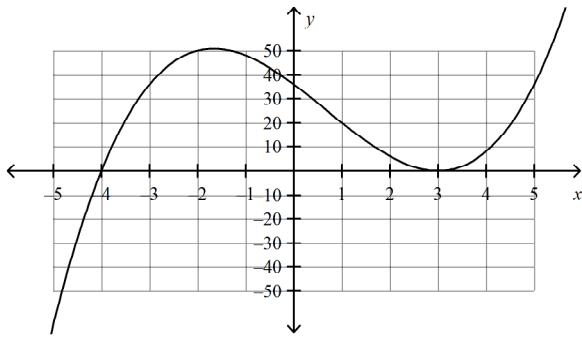
Roots: _____, _____



18. State the *relative maximum value* and *relative minimum value* of the graph below.

Relative Maximum: _____

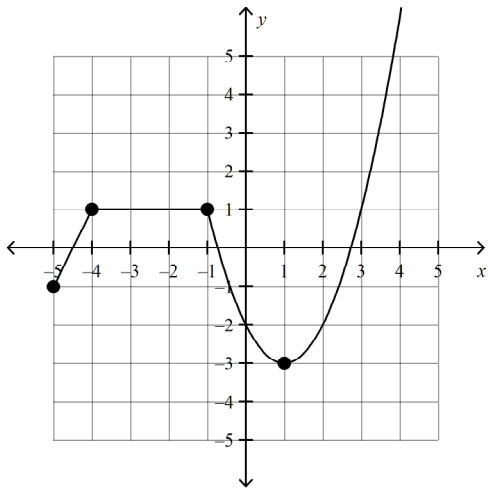
Relative Minimum: _____



19. State the *domain* and *range* of the graph below.

Domain: _____

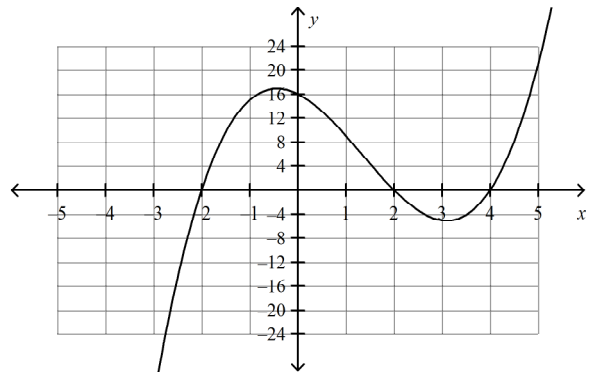
Range: _____



20. State the *x-intercept(s)* and *y-intercept* of the graph below.

x-int: _____

y-int: _____

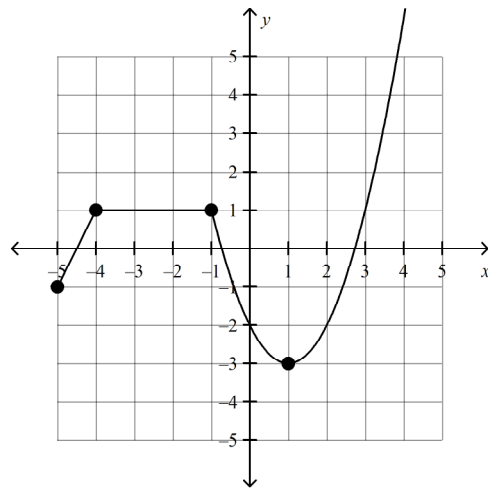


21. Use the graph below to state the intervals over which the function is increasing, decreasing, or constant.

Increasing: _____

Decreasing: _____

Constant: _____



22. Write a polynomial of least degree with roots 0, 3, and -4 .

23. Find the real or imaginary solutions of the equation.

$$(x - 2)(x - 5)(4x + 3) = 0$$

24. Find the real or imaginary solutions of the equation.

$$(x + 2)^2(x + 6)(x - 4) = 0$$

25. Find the real or imaginary solutions of the equation. (Hint: Factor out a GCF if possible, then use factoring, completing the square or the quadratic formula to solve, if necessary).

$$3x^2 + 6x - 105 = 0$$

26. Find the real or imaginary solutions of the equation. (Hint: Factor out a GCF if possible, then use factoring, completing the square or the quadratic formula to solve, if necessary).

$$x^4 - 121x^2 = 0$$

27. Find the real or imaginary solutions of the equation. (Hint: Factor out a GCF if possible, then use factoring, completing the square or the quadratic formula to solve, if necessary).

$$4x^3 + x^2 - 11x = 0$$

28. Find the real or imaginary solutions of the equation. (Hint: Factor out a GCF and then use factoring, completing the square or the quadratic formula to solve, if necessary).

$$x^3 - 10x^2 + 24x = 0$$

29. Find the real or imaginary solutions of the equation. (Hint: Factor out a GCF if possible, then use factoring, completing the square or the quadratic formula to solve, if necessary).

$$x^4 - 5x^3 - 36x^2 = 0$$

30. Is $x + 5$ a factor of $3x^3 + 8x^2 + 5x - 7$? Show work to justify your answer.

32. Divide. Write the quotient along with the remainder as a fraction.

$$(x^3 - 4x^2 - 7x - 38) \div (x + 8)$$

31. Given $P(x) = 3x^3 - 4x^2 + 2x + 6$, find $P(-3)$. Show work to justify your answer.

33. Simplify:

$$\frac{x^3 + 343}{x + 7}$$