Math II Midterm Study Guide Name _____

Simplify each expression.

1. $(2x^3 - x^4 + 3x^2) - (5x^4 + 3x^2 - 8x^3)$

2. $(2x^3 + 3x^4 + 8) + (7x^4 - 5x^3 - 6)$

Find each product.

3. $(3x^2 - 8x + 2)(x - 1)$

4. $(2x - 3)(3x - 7)$

Divide.

5. $(x^3 - 15x^2 + 58x - 13) \div (x - 8)$

6. $(x^3 + x^2 - 36x - 38) \div (x + 6)$

Simplify. Your answer should contain only positive exponents.

7. $-15xy(15x^5y^3)$

8. $11x^2y^3(16x^2y^3)$

9. $(-3x^2y^4)^5$

10. $(-4x^5y^3)^3$

11. $\dfrac{18x^2y^6}{12x^4y^8}$

12. $\dfrac{4x^7y^8}{4x^6y^5}$

13. $\dfrac{6d^4}{(2d^4)^3}$

14. $\dfrac{20z^{-9}}{(-5z)^2}$

15. $\dfrac{2q^{-9}b}{5(q^{-5}b^{-4})^2}$

Simplify.

16. $\sqrt{48}$

17. $\sqrt{50}$

18. $\sqrt{18}$

19. $\sqrt{27x^7y^2}$

20. $2y^2\sqrt{25x^4y^6}$

21. $4\sqrt{63x^2y^2}$

Solve. (Choose your method: GCF, factoring, square roots, completing the square, or quadratic formula)

22. $3(x - 7)^2 + 34 = 46$

23. $4(x + 9)^2 + 8 = 32$

24. $4x^2 + 12x + 9 = 0$

25. $9x^2 - 6x - 8 = 0$

26. $4x^2 - 9x - 5 = -6$

27. $2x^2 - 13x + 19 = 0$

Solve. (Choose your method: GCF, factoring, square roots, completing the square, or quadratic formula)

28. $x^2 - 2x + 17 = 0$

29. $x^2 + 10x + 89 = 0$

30. $x^2 - 5x - 14 = 0$

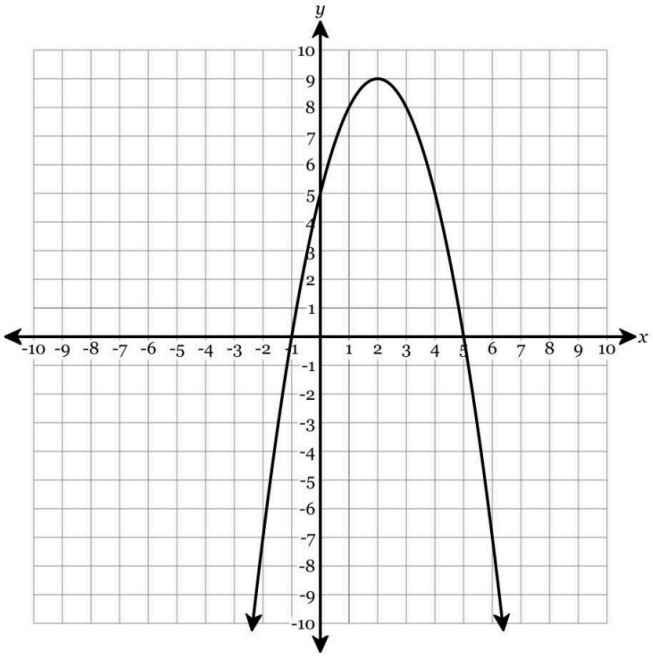
31. $x^2 + 12x + 20 = 0$

32. Find the equation of the axis of symmetry of $y = x^2 + 8x + 22$.

33. Find the vertex of $y = x^2 - 2x + 8$.

34. Complete the square to rewrite the quadratic function in vertex form.
$y = x^2 + 10x + 5$

35. Using the graph, determine the following parabola features.



Axis of Symmetry:

Vertex:

Domain:

Range:

y-intercept:

x-intercepts: