Arlington High School

Dual Credit Pre-Calculus ~ Summer Packet

DUE THE FIRST DAY OF SCHOOL

This summer packet is for all students enrolled in Statewide Dual Credit Pre-Calculus for the 2020-2021 school year. The entire packet is due the first day of school. Any packets not turned in the first day of school will not be eligible for full credit. Students who do not turn in a packet after 2 school days will receive a zero. The problems in this packet are designed to help you review topics that are important to your success in DC Pre-Calculus. You will be tested on this material. **You will NOT be allowed to use a calculator on the Test**.

Follow the directions in the packet and complete all the problems, neatly showing all of your work. You will not be given credit for this packet if no work is shown. Do not use a calculator when completing this packet. This packet will count as part of your first quarter grade.

I look forward to meeting you and working with you in the Fall.

Enjoy your summer!

DC Pre-Calculus **Summer Work** **Name**_____

Simplify each expression.

1. $\left(-4\right)^2$

2. -4^2

3. 4^{-2}

4. -4^{-2}

5. $\left(5x^3\right)^2$

6. $\left(-4x^2\right)^{-1}$

7. $\left(x^3y^{-2}\right)^{-1}$

8. $\dfrac{x^2y^3}{xy^5}$

9. $\dfrac{4x^{-2}\left(yz\right)^{-1}}{2^2x^4y}$

10. $\left(\dfrac{3x^{-1}}{4y^{-1}}\right)^{-2}$

Add, subtract, or multiply, as indicated. Express your answer as a single polynomial in standard form.

11. $\left(x^3+2x^2+3\right)+\left(x^2-3x+3\right)$

12. $\left(x^2-2x-4\right)-\left(x^3-2x^2-x+2\right)$

13. $4x^2\left(x^4-2x+3\right)$

14. $\left(2x-4\right)\left(x+2\right)$

15. $\left(2x-5\right)^2$

16. $\left(2x-4\right)\left(3x^3-4x+2\right)$

Factor each polynomial completely.

17. $x^2 - 49$

18. $4x^2 - 9y^4$

19. $5 - 45x^2$

20. $x^2 + 5x + 6$

21. $x^2 + 5x + 4$

22. $x^2 + 3x - 4$

23. $x^3 + 7x^2 - 30x$

24. $3x + 3$

25. $2x^2 - 9x + 10$

26. $x^3 - 3x^2 + 2x - 6$

27. $x^3 - 7x^2 + 5x - 35$

Use synthetic division to find the quotient and remainder when:

28. $x^3 - x^2 + 2x + 4$ **is divided by** $x - 2$

29. $x^5 + 5x^3 - 10$ **is divided by** $x + 1$

Reduce each rational expression to lowest terms.

30. $\dfrac{3x+9}{x^2-9}$

31. $\dfrac{2x^2+5x-3}{1-2x}$

32. $\dfrac{\dfrac{x^2+7x+6}{x^2+x-6}}{\dfrac{x^2+5x-6}{x^2+5x+6}}$

Solve each equation.

33. $2x-3=5$

34. $6-x=2x+9$

35. $5-(2x-1)=10$

36. $\dfrac{2}{y}+\dfrac{4}{y}=3$

37. $x^2=4x$

38. $|3x-1|=2$

39. $2x^2-5x-3=0$

40. $x^2-4x=-2$

41. $x^3+4x^2-x-4=0$

Simplify each expression.

42. $\sqrt{8}$

43. $\sqrt{54}$

44. $\sqrt{16x^5}$

45. $3\sqrt{7}+2\sqrt{7}$

46. $\left(\sqrt{7}-2\right)\left(\sqrt{7}+4\right)$

47. $\left(\sqrt{x}+\sqrt{3}\right)^2$

Rationalize the denominator.

48. $\dfrac{1}{\sqrt{3}}$

49. $\dfrac{-\sqrt{2}}{\sqrt{5}}$

50. $\dfrac{3}{2-\sqrt{5}}$

Perform the operation indicated.

51. $\dfrac{1}{3}+\dfrac{3}{4}$

52. $\dfrac{x}{5}+\dfrac{x}{3}$

53. $\dfrac{2}{5}-\dfrac{1}{3}$

Perform the operation indicated.

54. $3 - \frac{4}{7}$

55. $\frac{2}{5} \cdot \frac{1}{4}$

56. $4 \cdot \frac{3}{5}$

57. $\frac{2}{5} \div \frac{1}{4}$

58. $3 \div \frac{2}{5}$

59. $\dfrac{\frac{8}{9}}{\frac{3}{16}}$

60. $\dfrac{\frac{y}{5}}{\frac{y^2}{20}}$

Solve each equation using the Quadratic Formula. Answers should be simplified without using decimals.

61. $x^2 - 4x + 2 = 0$

62. $4x^2 = 1 - 2x$

Find an equation for the line:

63. containing the points $(1,3)$ and $(-1,2)$

64. x-intercept $= -4$ and y-intercept $= 4$

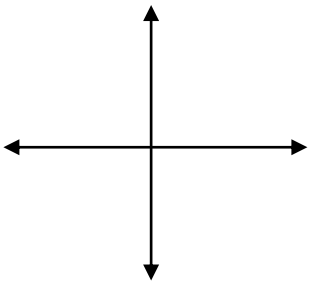
Solve each system of equations.

65.
$$\begin{aligned} x + 2y &= -7 \\ x + y &= -3 \end{aligned}$$

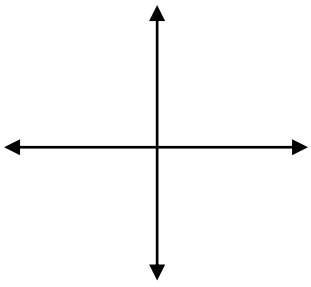
66.
$$\begin{aligned} 3x - 6y &= 2 \\ 5x + 4y &= 1 \end{aligned}$$

Sketch the graph of each of the following.

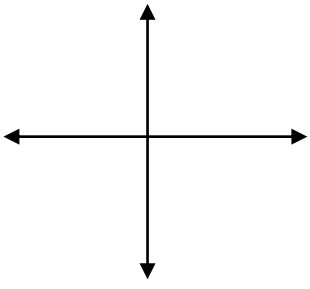
67. $y = -x + 3$



68. $2x + 3y = 6$



69. $x = 3$



70. $3y = 2x - 1$