SOUTHINGTON HIGH SCHOOL

Richard Aroian, Principal
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Dear Students,

Attached to this letter you will find a comprehensive set of problems that reflect critical math skills that should be mastered prior to entering your Algebra 2 class at Southington High School. You are encouraged to utilize a wide range of methods for finding the correct answer, including techniques both with and without the aid of a calculator*. Working with a friend, sibling, or parent might be a helpful way to complete this assignment! Also watching videos on Khan Academy is encouraged. There are QR codes included that provide support videos. These can be accessed online but do not work well from a printed version. You can also access Khan Academy by going to https://www.khanacademy.org/.

On the first or second day of the course your teachers will check your packets for completion and review how to solve some of the problems that are most important to beginning your first unit of the year. To receive full credit for completing the assignment you must attempt each problem and show all work used to complete it. Soon thereafter, you will be given a brief assessment on these skills to measure your progress and readiness for the course. Please note: the work and answers to the odd questions are in this packet. They are provided as a means to assess your work as you go.

Our goal is for you to have a successful and enjoyable transition into your Algebra 2 class at Southington High School and this packet is meant to help facilitate this process. Our absolute hope is that you try your best and remember that your teachers are prepared to help you with any challenges you faced when you return in late August.

Sincerely,

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*Reminder: A calculator is an important tool used within this course. Students are strongly encouraged to obtain one for their personal use. Copies of this packet may be found on the Southington High SchoolWebsite. Go to www.southingtonschools.org and click on the link to Parent Resources

Name: _____ Date: _____

ALGEBRA 2 SUMMER PACKET 2026

Factor the following expressions, completely: 

1) $5x^2 + 15x$

2) $x^2 - 4$

3) $x^2 + 7x + 10$

4) $x^2 - 36$

5) $x^2 + 8x + 15$

6) $x^2 - 3x - 18$

7) $2x^2 + 4x - 48$

8) $x^2 - 13x + 36$

9) $x^2 - 2x - 35$

10) $x^2 + 5x + 6$

11) $3x^2 - 3x - 60$

12) $4x^2 + 28x + 40$

13) $3x^2 - 11x - 20$

14) $16x^2 - 25$

15) $3x^2 - 9x - 30$

16) $42x^2 + 6x$

17) $6x^2 - 7x - 5$

18) $2x^2 - 8$

19) $12x^2 - 27$

20) $5x^3 - 5x$

Simplify the Radical:

21) $\sqrt{25}$ 22) $\sqrt{12}$ 23) $\sqrt{27}$ 24) $\sqrt{200}$

25) $\sqrt{48}$ 26) $\sqrt{125}$ 27) $\sqrt{98}$ 28) $\sqrt{8}$

Solve the following equations:

29) $8(2x - 5) = -6(3x - 4)$ 30) $-x - 2 = 9(x - 8)$

Multiply the following.

31) $5(x + 12)$ 32) $x(3x^2 - 4x - 2)$ 33) $3x(x - 11)$

34) $(2x - 3) - (x - 5)$ 35) $2(x + 5) + (x - 9)$ 36) $4 - 2(x^2 - 1)$

37) $-\frac{2}{3}(3x - 6)$ 38) $(x - 7)(x + 7)$ 39) $-(x + 6)(x + 1)$

40) $(3x + 1)^2$ 41) $2(x - 4)^2$ 42) $-\frac{1}{2}(x + 1)^2$

Simplify each expression using the properties of exponents (no negative exponents):



43) $x^4 \cdot x^5$ 44) $(x^2)^4$ 45) $\frac{x^5}{x^2}$ 46) x^0

47) $\left(\frac{x}{2}\right)^3$ 48) x^{-4} 49) $(3x)^0$ 50) $3x^0$

51) $(3xy^2)^2$ 52) $2x^{-3}$ 53) $(2x)^{-3}$ 54) $(-3x)^3$

55) $3(6x^3)^2$ 56) $\left(\frac{2x}{3}\right)^2$ 57) $\frac{15x^4}{3x^7}$ 58) $\left(\frac{2x}{6x^2}\right)^2$

Name: _____ Date: _____

ALGEBRA 2 SUMMER PACKET 2026

Factor the following expressions, completely:

1) $5x^2 + 15x$

$5x(x+3)$

2) $x^2 - 4$

3) $x^2 + 7x + 10$

$(x+2)(x+5)$

4) $x^2 - 36$

5) $x^2 + 8x + 15$

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

6) $x^2 - 3x - 18$

7) $2x^2 + 4x - 48$

$2(x^2+2x-24)$

$2(x+6)(x-4)$

8) $x^2 - 13x + 36$

9) $x^2 - 2x - 35$

$(x-7)(x+5)$

10) $x^2 + 5x + 6$

11) $3x^2 - 3x - 60$

$3(x^2-x-20)$

$3(x-5)(x+4)$

12) $4x^2 + 28x + 40$

13) $3x^2 - 11x - 20$

$(3x+4)(x-5)$

14) $16x^2 - 25$

15) $3x^2 - 9x - 30$

$3(x^2-3x-10)$

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

16) $42x^2 + 6x$

17) $6x^2 - 7x - 5$

$(2x+1)(3x-5)$

18) $2x^2 - 8$

19) $12x^2 - 27$

$3(4x^2-9)$

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

20) $5x^3 - 5x$

Simplify the Radical:

21) $\sqrt{25}$

5

22) $\sqrt{12}$

23) $\sqrt{27}$

$\sqrt{9}\ \sqrt{3}$

$3\sqrt{3}$

24) $\sqrt{200}$

25) $\sqrt{48}$

$\sqrt{16}\ \sqrt{3}$

$4\sqrt{3}$

26) $\sqrt{125}$

27) $\sqrt{98}$

$\sqrt{49}\ \sqrt{2}$

$7\sqrt{2}$

28) $\sqrt{8}$

Solve the following equations:

29) $8(2x - 5) = -6(3x - 4)$

$16x - 40 = -18x + 24$

$+18x + 40 \quad +18x + 40$

$\frac{34x}{34} = \frac{64}{34}$

$x = \frac{32}{17}$

30) $-x - 2 = 9(x - 8)$

Multiply the following.

31) $5(x + 12)$

$5x + 60$

32) $x(3x^2 - 4x - 2)$

33) $3x(x - 11)$

$3x^2 - 33x$

34) $(2x - 3) - (x - 5)$

35) $2(x + 5) + (x - 9)$

$2x + 10 + x - 9$

$3x + 1$

36) $4 - 2(x^2 - 1)$

37) $-\frac{2}{3}(3x - 6)$

$-2x + 4$

38) $(x - 7)(x + 7)$

39) $-(x + 6)(x + 1)$

$-(x^2 + 7x + 6)$

$-x^2 - 7x - 6$

40) $(3x + 1)^2$

41) $2(x - 4)^2$

$2(x^2-8x+16)$

$2x^2-16x+32$

42) $-\frac{1}{2}(x + 1)^2$

Simplify each expression using the properties of exponents (no negative exponents):

43) $x^4 \cdot x^5$

x^9

44) $(x^2)^4$

45) $\frac{x^5}{x^2}$

x^3

46) x^0

47) $\left(\frac{x}{2}\right)^3$

$\frac{x^3}{8}$

48) x^{-4}

49) $(3x)^0$

1

50) $3x^0$

51) $(3xy^2)^2$

$9x^2y^4$

52) $2x^{-3}$

53) $(2x)^{-3}$

$\frac{1}{(2x)^3} = \frac{1}{8x^3}$

54) $(-3x)^3$

55) $3(6x^3)^2$

$3(36x^6)$

$108x^6$

56) $\left(\frac{2x}{3}\right)^2$

57) $\frac{15x^4}{3x^7}$

$\frac{5}{x^3}$

58) $\left(\frac{2x}{6x^2}\right)^2$