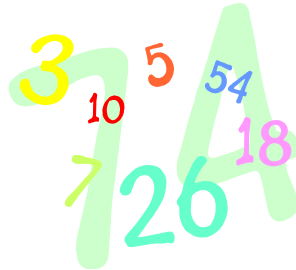


Archbishop Williams High School

Summer 2019

Summer Math Requirement



Students Entering **Precalculus Accelerated**

DIRECTIONS:

- Complete ALL problems
- Pencil ONLY
- Show ALL work. NO work = NO Grade
- Calculators are not needed
- Summer Math Packet will be graded
- Due Friday, September 6, 2019

Student Name \_\_\_\_\_

Rationalize the denominator.

1)  $\frac{1}{\sqrt{7}}$

2)  $\frac{\sqrt{2}}{\sqrt{5}}$

3)  $\frac{13}{3+\sqrt{11}}$

4)  $\frac{7}{\sqrt{5}-2}$

5)  $\frac{6}{\sqrt{5}+\sqrt{3}}$

6)  $\frac{3}{3+\sqrt{7}}$

Factor out the greatest common factor.

7)  $18x + 27$

8)  $3x^2 + 6x$

9)  $9x^4 - 18x^3 + 27x^2$

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

11)  $x^2(x - 3) + 12(x - 3)$

12)  $x^2(2x + 5) + 17(2x + 5)$

Factor each trinomial.

13)  $x^2 - 2x - 15$

14)  $3x^2 - x - 2$

15)  $6x^2 - 11x + 4$

16)  $9x^2 - 9x + 2$

17)  $20x^2 + 27x - 8$

18)  $6x^2 - 5xy - 6y^2$

Factor the difference of two squares.

19)  $x^2 - 100$

20)  $36x^2 - 49$

21)  $9x^2 - 25y^2$

22)  $x^4 - 16$

23)  $16x^4 - 81$

24)  $x^8 - 4$

Factor using the formula for the sum or difference of two cubes.

25)  $x^3 + 27$

26)  $x^3 - 64$

27)  $8x^3 - 1$

28)  $64x^3 + 27$

29)  $x^3 - 27$

30)  $8x^3 + 125$

Factor by grouping.

31)  $x^3 - 2x^2 + 5x - 10$

32)  $x^3 - 3x^2 + 4x - 12$

33)  $x^3 - x^2 + 2x - 2$

34)  $x^3 + 6x^2 - 2x - 12$

35)  $3x^3 - 2x^2 - 6x + 4$

36)  $x^3 - x^2 - 5x + 5$

Compute the discriminant of each equation. What does the discriminant indicate about the number and type of solutions?

37)  $x^2 - 4x - 5 = 0$

38)  $4x^2 - 2x + 3 = 0$

39)  $2x^2 - 11x + 3 = 0$

40)  $2x^2 + 11x - 6 = 0$

41)  $x^2 = 2x - 1$

42)  $x^2 - 3x - 7 = 0$



Solve each quadratic equation by the method of your choice.

$$43) 2x^2 - x = 1$$

$$44) 5x^2 + 2 = 11x$$

$$45) 3x^2 = 60$$

$$46) x^2 - 2x = 1$$

$$47) (2x + 3)(x + 4) = 1$$

$$48) (3x - 4)^2 = 16$$

Find the slope of the line passing through each pair of points.

49)  $(4, 7)$  and  $(8, 10)$

50)  $(2, 1)$  and  $(3, 4)$

51)  $(-2, 1)$  and  $(2, 2)$

52)  $(4, -2)$  and  $(3, -2)$

53)  $(-2, 4)$  and  $(-1, -1)$

54)  $(5, 3)$  and  $(5, -2)$

Use the given conditions to write an equation for each line in point-slope form and slope-intercept form.

55) *Passing through (1, 2) and (5, 10)*

56) *Passing through (-3, 0) and (0, 3)*

57) *Passing through (-3, -1) and (2, 4)*

58) *Passing through (-3, -2) and (3, 6)*

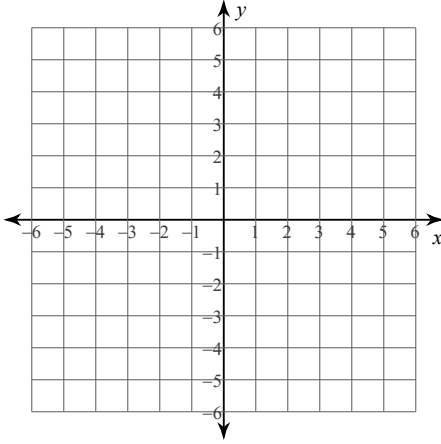
59) *Passing through (-3, -1) and (4, -1)*

60) *Passing through (-2, -5) and (6, -5)*

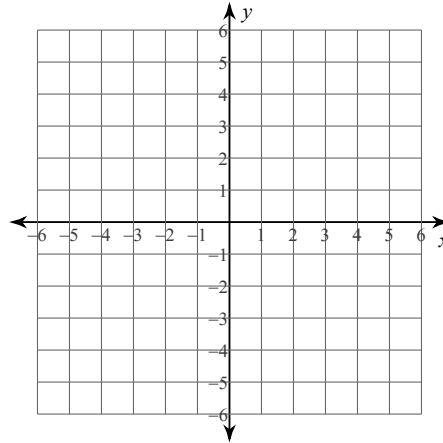
## Graphing Lines

Sketch the graph of each line.

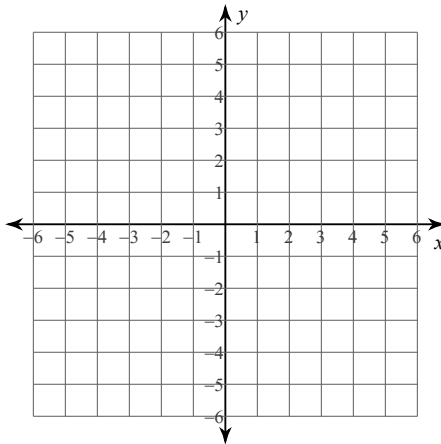
1)  $y = \frac{7}{2}x - 2$



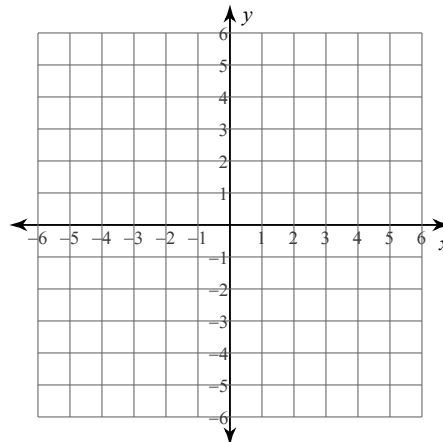
2)  $y = -6x + 3$



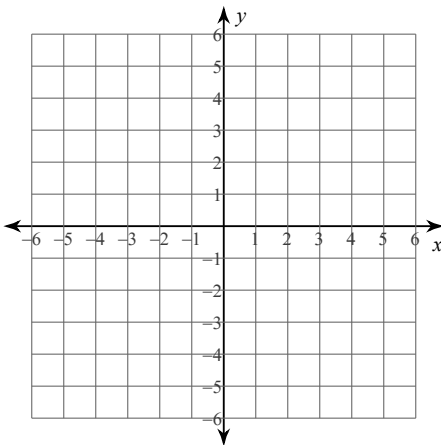
3)  $y = -5$



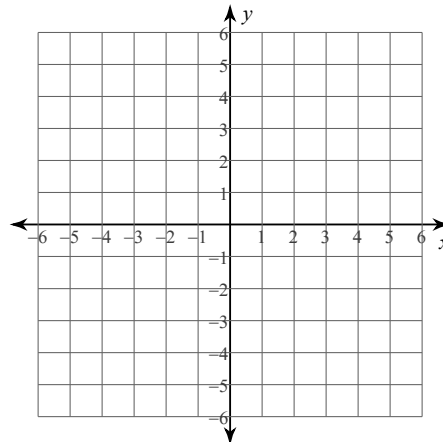
4)  $y = \frac{6}{5}x + 1$



5)  $y = \frac{1}{4}x + 2$



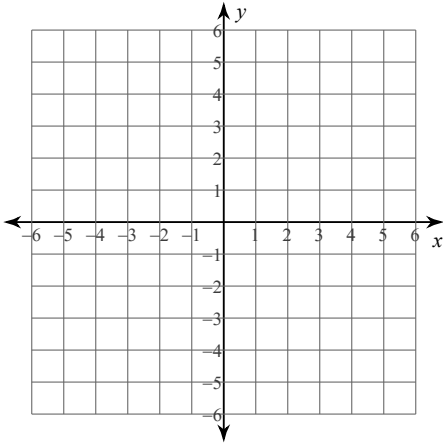
6)  $x = 5$



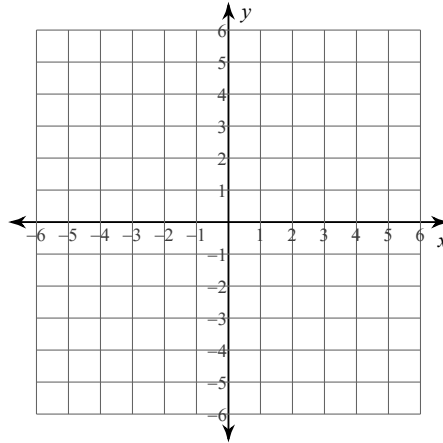
## Graphing Lines

Sketch the graph of each line.

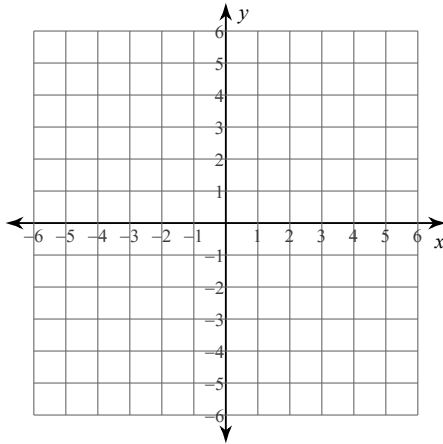
1)  $7x + y = 5$



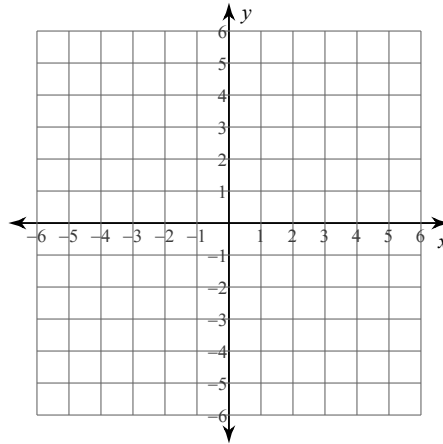
2)  $3x + 5y = -5$



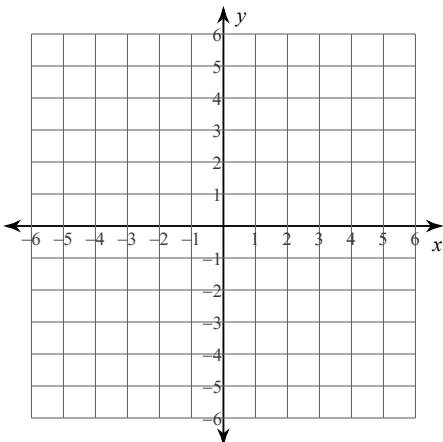
3)  $y = 4$



4)  $6x + 5y = 20$



5)  $x = -3$



6)  $2x + y = 4$

