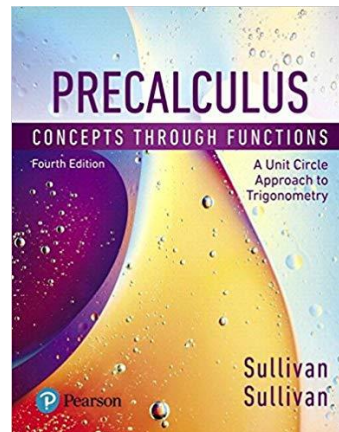


Dear Future MATH 138/139 Precalculus students:

**Required textbook:** Precalculus: Concepts Through Functions, A Unit Circle Approach to Trigonometry, 4<sup>th</sup> Edition, 2018, Sullivan & Sullivan. Publisher: Pearson Education

**ISBN:** 9780134686974

You can purchase or rent the textbook from any reliable source. A few textbook sites are listed below. You will be using this textbook for both Math138 and Math139 (both semesters). You **DO NOT** need the MyMathLab option or the eText Access Card Package.



[www.Chegg.com](http://www.Chegg.com)

[www.Amazon.com](http://www.Amazon.com)

[www.AbeBooks.com](http://www.AbeBooks.com)

[www.eCampus.com](http://www.eCampus.com)

**Required calculator:** Graphing calculator, Ti83+ or Ti84+ preferred (any model)

You are expected to have your textbook with you on the first day of classes. Plan to order your book around August 1<sup>st</sup> to ensure that it will arrive on time.

*Also, as a reminder, all students should have received a minimum score of 46 on the ALEKS exam to be enrolled in Precalculus 1. If you have not taken the test, or need to do so again, please visit Joliet Junior College's Placement Testing webpage.*

If you have any questions, contact one of the following:

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Also, attached is a packet of problems we think you should know how to do when you come into the first day of Pre-calculus Honors class. All of these topics were taught in either Algebra 1 or Algebra 2. We will spend a day or two going over them before taking a quiz over the types of problems in this packet. This packet will not be graded so if you think you know a topic, feel free to skip it. Just be prepared to do them on a quiz. The answer key is also attached at the end and will be posted over the summer.

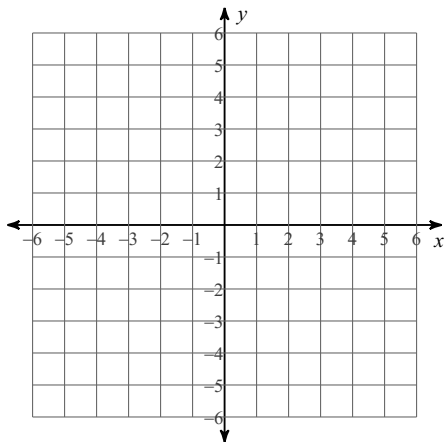
If you are struggling to remember how to do some of these, here are a few resources. [www.khanacademy.org](http://www.khanacademy.org) and [www.patrickjmt.com](http://www.patrickjmt.com) both have many videos explaining these topics in detail.

We can't wait to get started learning many great and interesting topics!

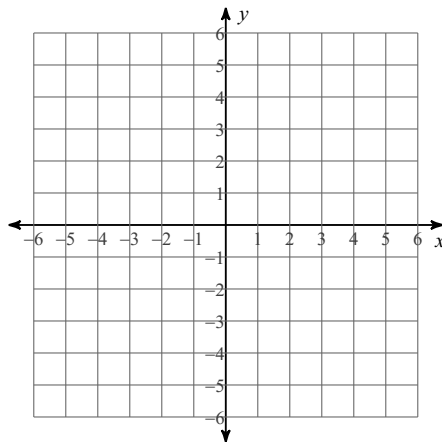
# Summer Refresher Topics

Sketch the graph of each line.

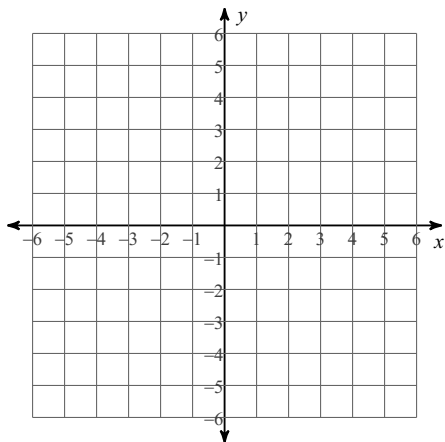
1)  $x$ -intercept =  $-4$ ,  $y$ -intercept =  $5$



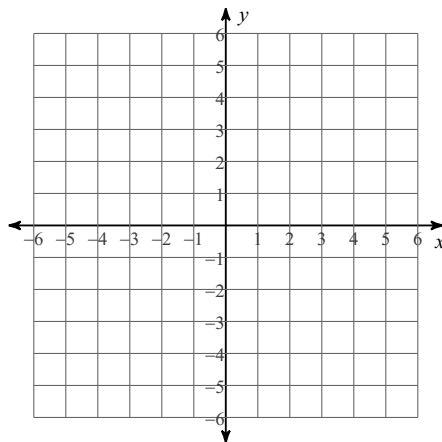
2)  $x$ -intercept =  $-4$ ,  $y$ -intercept =  $4$



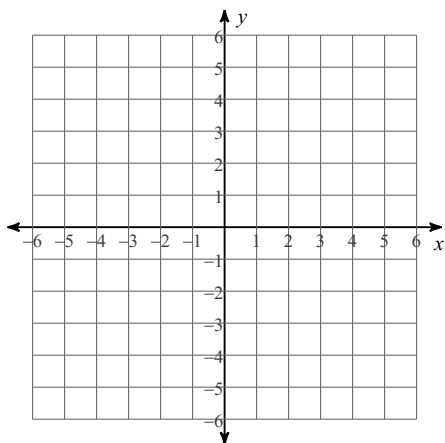
3)  $3x - 5y = 10$



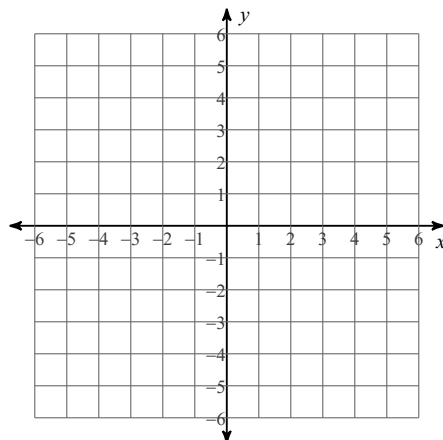
4)  $5x - 4y = 8$



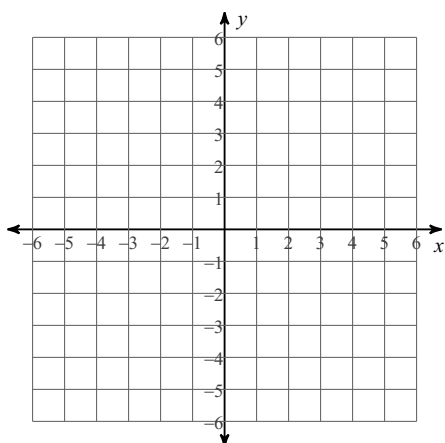
5)  $y = -2x - 2$



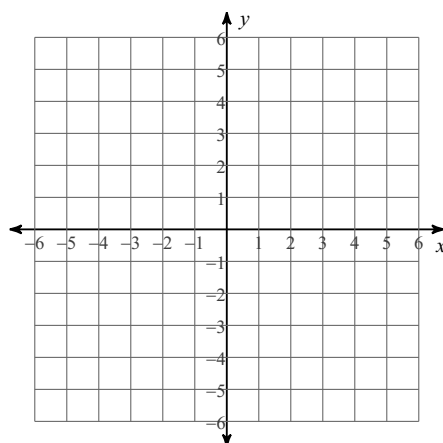
6)  $y = \frac{6}{5}x + 2$



7)  $-y = 5 + 5x$

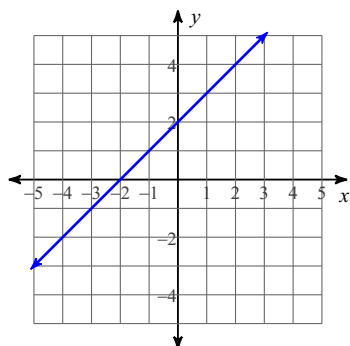


8)  $3x - 4y = -8$

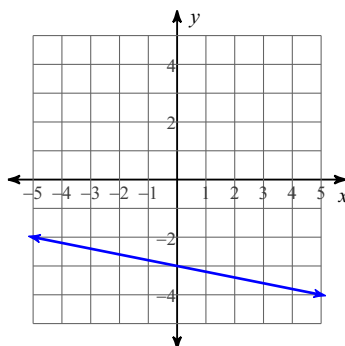


**Write the slope-intercept form of the equation of each line.**

9)



10)



**Write the slope-intercept form of the equation of each line given the slope and y-intercept.**

11) Slope = 1, y-intercept = -2

12) Slope =  $\frac{7}{3}$ , y-intercept = -4

**Write the slope-intercept form of the equation of each line.**

13)  $7x - 5y = -30$

14)  $2x - 3y = -6$

15)  $y + 2 = -\frac{5}{3}(x - 3)$

16)  $y + 2 = -\frac{5}{2}(x - 2)$

17)  $-x + 4y = 0$

18)  $0 = -2y + x$

**Write the slope-intercept form of the equation of the line through the given point with the given slope.**

19) through:  $(-2, 5)$ , slope = -4

20) through:  $(2, -2)$ , slope = -3

**Write the slope-intercept form of the equation of the line through the given points.**

21) through:  $(0, 1)$  and  $(5, -5)$

22) through:  $(5, 3)$  and  $(4, 1)$

**Write the slope-intercept form of the equation of the line described.**

23) through:  $(-2, 3)$ , parallel to  $y = -\frac{1}{6}x - 4$

24) through:  $(1, 4)$ , parallel to  $y = 5x$

25) through:  $(1, 2)$ , perp. to  $y = -\frac{1}{5}x - 4$

26) through:  $(5, 1)$ , perp. to  $y = -\frac{2}{5}x + 5$

Use the information provided to write the standard form equation of each circle.

27) Center:  $\left(\frac{23}{2}, -5\right)$   
Radius: 4

28) Center:  $(6, -11)$   
Radius:  $\sqrt{21}$

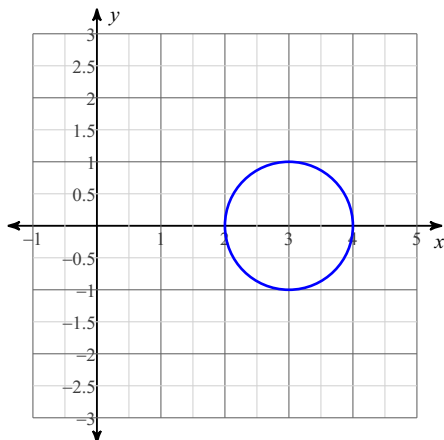
29) Center:  $(13, 2)$   
Point on Circle:  $(10, 7)$

30) Center:  $(-12, 6)$   
Point on Circle:  $(-10, 8)$

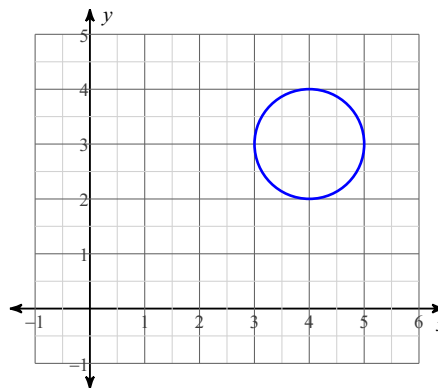
31) Ends of a diameter:  $(4, -4)$  and  $(6, 8)$

32) Ends of a diameter:  $(-11, -13)$  and  $(-15, -11)$

33)



34)



35) Center lies in the second quadrant  
Tangent to  $y = 1$ ,  $x = -13$ , and  $x = -17$

36) Center lies on the y-axis  
Tangent to  $y = 1$  and  $x = 5$

**Factor each completely.**

37)  $n^2 - 6n - 27$

38)  $n^2 + 8n$

39)  $3x^2 - 36xy + 108y^2$

40)  $6x^2 - 42xy + 36y^2$

41)  $6x^2 - 9xy - 42y^2$

42)  $35x^2 + 125xy - 250y^2$

43)  $4n^3 + 13n^2 + 3n$

44)  $9x^4 + 90x^3$

**Simplify.**

45)  $\sqrt[4]{486n^7}$

46)  $\sqrt{36m^3}$

47)  $\sqrt{216m^2n^3}$

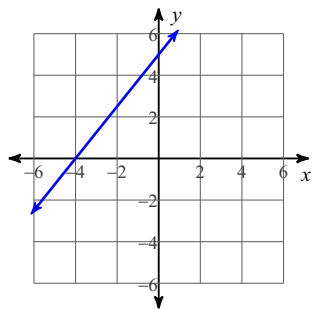
48)  $\sqrt{98xy^4}$

49)  $\frac{\sqrt{3}}{\sqrt{27}}$

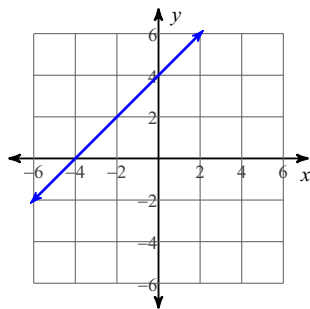
50)  $\frac{\sqrt{2}}{\sqrt{18}}$

## Answers to Summer Refresher Topics

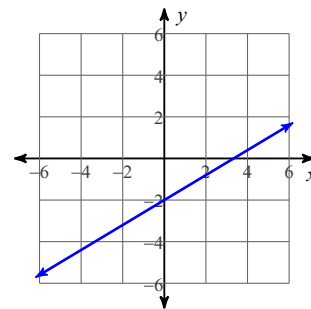
1)



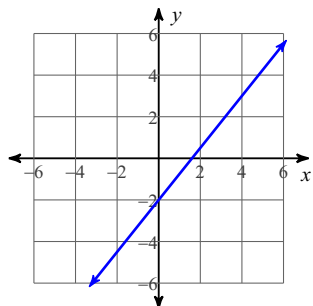
2)



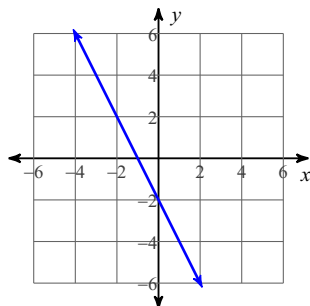
3)



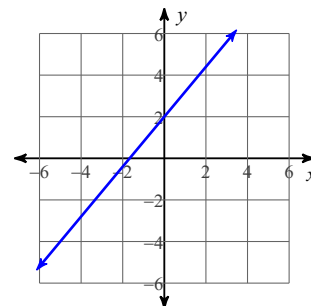
4)



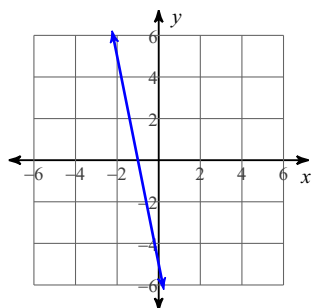
5)



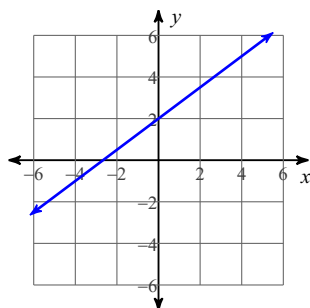
6)



7)



8)



9)  $y = x + 2$

10)  $y = -\frac{1}{5}x - 3$

11)  $y = x - 2$

12)  $y = \frac{7}{3}x - 4$

13)  $y = \frac{7}{5}x + 6$

14)  $y = \frac{2}{3}x + 2$

15)  $y = -\frac{5}{3}x + 3$

16)  $y = -\frac{5}{2}x + 3$

17)  $y = \frac{1}{4}x$

18)  $y = \frac{1}{2}x$

19)  $y = -4x - 3$

20)  $y = -3x + 4$

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

22)  $y = 2x - 7$

23)  $y = -\frac{1}{6}x + \frac{8}{3}$

24)  $y = 5x - 1$

25)  $y = 5x - 3$

26)  $y = \frac{5}{2}x - \frac{23}{2}$

27)  $\left(x - \frac{23}{2}\right)^2 + (y + 5)^2 = 16$

28)  $(x - 6)^2 + (y + 11)^2 = 21$

29)  $(x - 13)^2 + (y - 2)^2 = 34$

30)  $(x + 12)^2 + (y - 6)^2 = 8$

31)  $(x - 5)^2 + (y - 2)^2 = 37$

32)  $(x + 13)^2 + (y + 12)^2 = 5$

33)  $(x - 3)^2 + y^2 = 1$

34)  $(x - 4)^2 + (y - 3)^2 = 1$

35)  $(x + 15)^2 + (y - 3)^2 = 4$

36)  $x^2 + (y - 6)^2 = 25$

37)  $(n - 9)(n + 3)$

38)  $n(n + 8)$

39)  $3(x - 6y)^2$

40)  $6(x - 6y)(x - y)$

41)  $3(2x - 7y)(x + 2y)$

42)  $5(7x - 10y)(x + 5y)$

43)  $n(n + 3)(4n + 1)$

44)  $9x^3(x + 10)$

45)  $3n\sqrt[4]{6n^3}$

46)  $6m\sqrt{m}$

47)  $6mn\sqrt{6n}$

48)  $7y^2\sqrt{2x}$

49)  $\frac{1}{3}$

50)  $\frac{1}{3}$