

4.03 Graphing by Intercepts; Non-Linear Graphs

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ANSWERS TO ALL EXERCISES ARE INCLUDED AT THE END OF THIS PAGE

EXAMPLE FOR DISCUSSION.

Graph $3X - 4Y = -12$ by slope-intercept method.

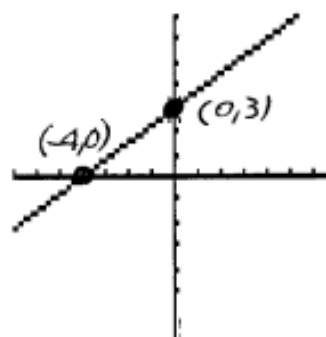
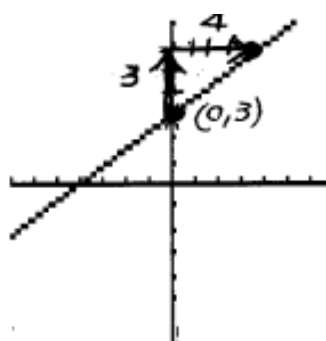
$$\begin{aligned} -4Y &= -3X - 12 \\ Y &= \frac{3}{4}X + 3 \\ Y\text{-int} &= 3; m = \frac{3}{4} = \frac{\text{rise}}{\text{run}} \end{aligned}$$

When the equation is given in **standard form**, it seems a lot of work to solve for Y in order to find the Y-intercept and slope. It may be easier to find the **X and Y-intercepts** and graph these points.

SAME EXAMPLE by "TWO INTERCEPT" method:

$$3X - 4Y = -12$$

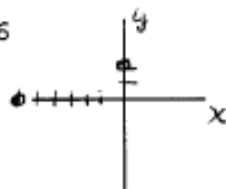
X	Y
0	3
-4	0



EXERCISES. In 1 - 14, find the X and Y intercepts, and sketch the graph.

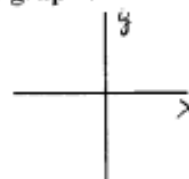
1. $-X + 3Y = 6$

X	Y
0	2
-6	0



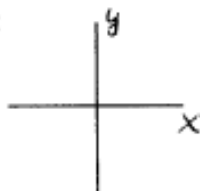
2. $4X - 2Y = -8$

X	Y
0	4
-2	0



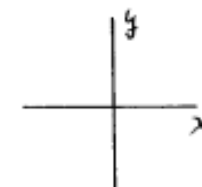
3. $-2X + 3Y = 12$

X	Y
0	0



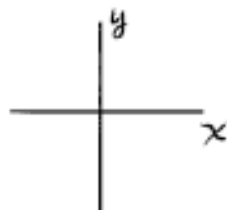
4. $4X + 2Y = -8$

X	Y
0	0



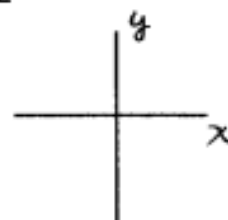
5. $X - 2Y = -8$

X	Y
0	0



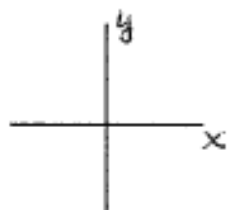
6. $2X - 3Y = 12$

X	Y
0	0



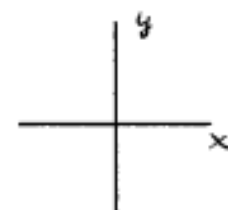
7. $3X - Y = -3$

X	Y
0	0



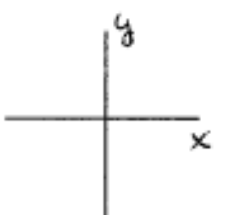
8. $X - 2Y = 6$

X	Y
0	0



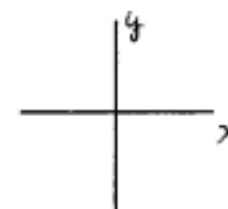
9. $X + Y = -3$

X	Y
0	0



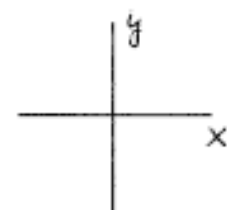
10. $X + 2Y = 8$

X	Y
0	0



11. $-3X + 2Y = -12$

X	Y
0	0



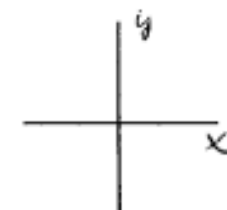
12. $4X - 2Y = -12$

X	Y
0	0



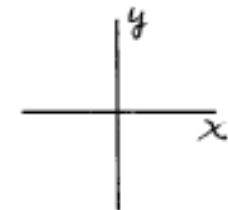
13. $X + 2Y = -6$

X	Y
0	0



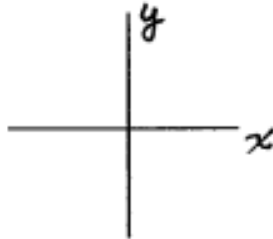
14. $-2X - 3Y = 6$

X	Y
0	0



15. Sometimes an equation has no X term. For example, $Y=4$. This could also be written as $0 \cdot X + Y = 4$. In this case, X could be any value, as long as the value of Y is 4. Complete the following table, and draw the graph.

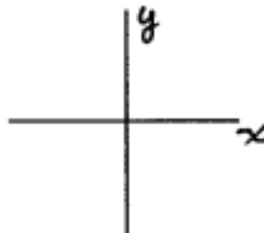
X	Y
0	
1	
2	
4	
-2	



$$Y = 4$$

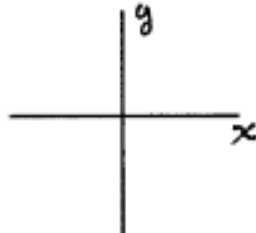
16. Sometimes an equation has no Y term. For example, $X=4$. This could also be written as $X + 0 \cdot Y = 4$. In this case, Y could be any value, as long as the value of X is 4. Complete the following table, and draw the graph.

X	Y
	0
	1
	2
	4
	-2

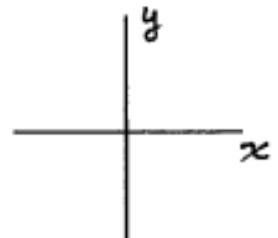


$$X = 4$$

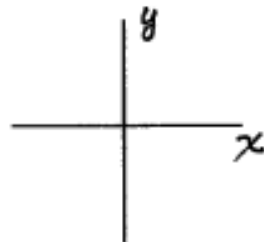
17. $Y = -2$



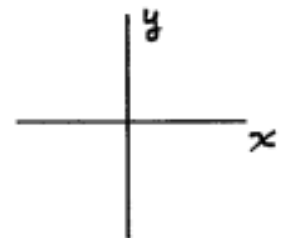
18. $X = -2$



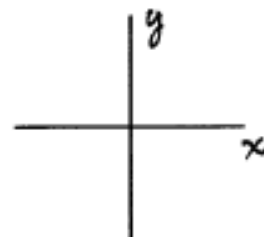
19. $X = 2$



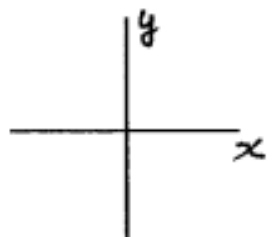
20. $Y = 2$



21. $Y = 0$



22. $X = 0$



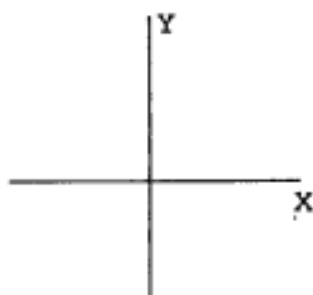
23. The graph of " $Y = (\text{a number})$ " is always a _____ line.
There is no X-intercept.

24. The graph of " $X = (\text{a number})$ " is always a _____ line.
There is no _____.

The following equations are not straight lines. A few more points and some "dot-to-dot" ingenuity will be needed.

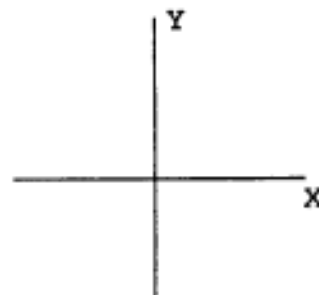
25. $Y = X^2$

X	Y
0	
1	
2	
3	
-1	1
-2	
-3	



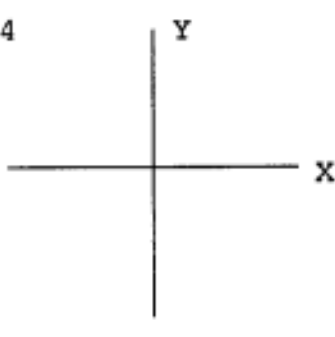
26. $Y = X^2 + 2$

X	Y
0	
1	
2	
3	
-1	3
-2	
-3	



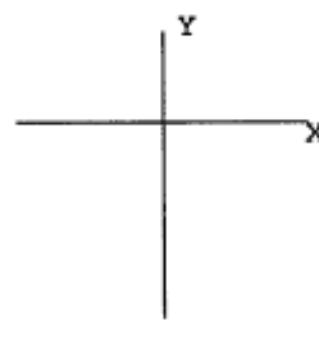
27. $Y = X^2 - 4$

X	Y
0	
1	
2	
3	
-1	-3
-2	
-3	



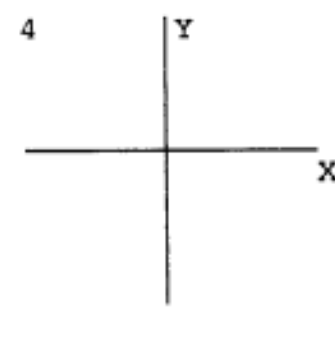
28. $Y = -X^2$

X	Y
0	
1	-1
2	
3	
-1	-1
-2	
-3	



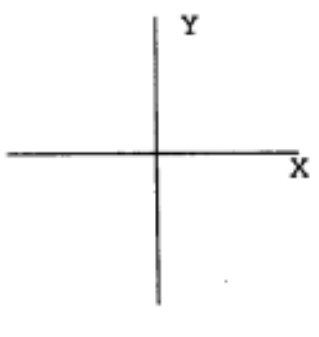
29. $Y = -X^2 + 4$

X	Y
0	
1	3
2	
3	
-1	3
-2	
-3	



30. $Y = X^3$

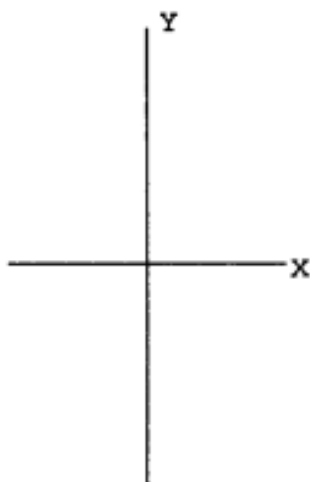
X	Y
0	
1	
2	
-1	
-2	



31. $Y = \frac{12}{X}$

(Notice that $X \neq 0!$)

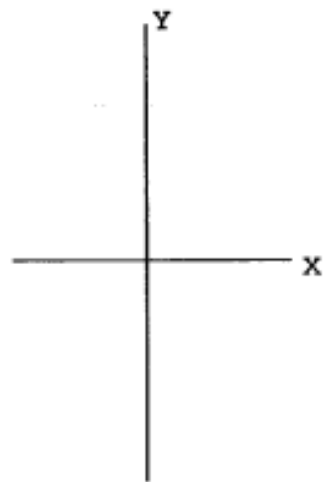
X	Y
1	
2	
3	
4	
6	
-1	
-2	
-3	
-4	
-6	



32. $Y = \frac{-12}{X}$

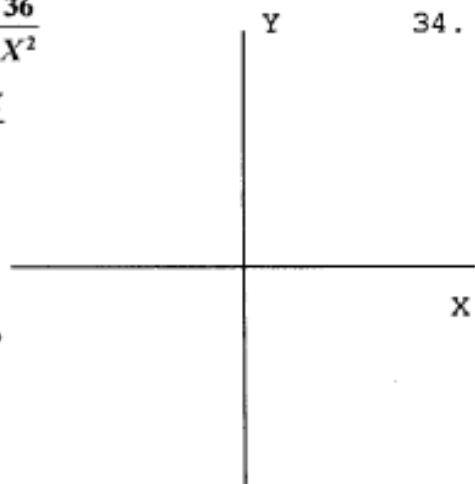
(Again, $X \neq 0!$)

X	Y
1	
2	
3	
4	
6	
-1	
-2	
-3	
-4	
-6	



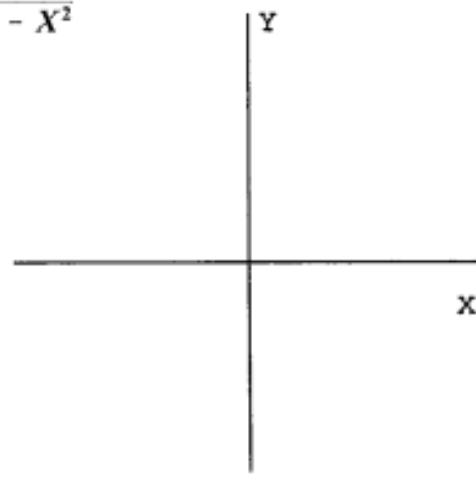
33. $Y = \frac{36}{X^2}$

X	Y
2	
3	
6	
-2	
-3	
-6	
0	??



34. $Y = \sqrt{25 - X^2}$

X	Y
0	
3	
4	
5	
-3	
-4	
-5	

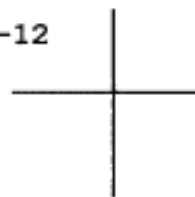


In 35 - 44, graph by whatever method seems appropriate.

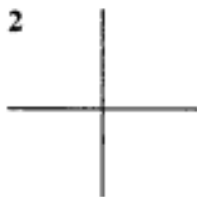
35. $Y = -2X + 4$



36. $2X + 3Y = -12$



37. $Y = -\frac{3}{4}X - 2$



38. $Y = \frac{3}{4}X - 2$



39. $Y = X$



40. $Y = -X$



41. $X - 2Y = 0$



42. $X + 2Y = 0$



43. $X = -6$



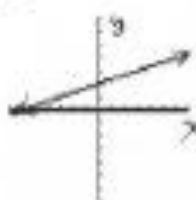
44. $-3Y = 6$



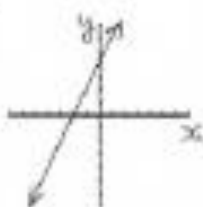
ANSWERS 4.03

p.319-324:

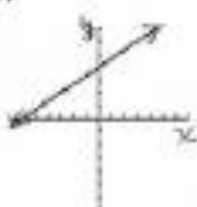
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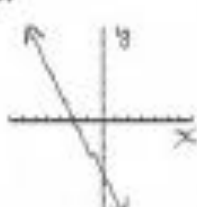
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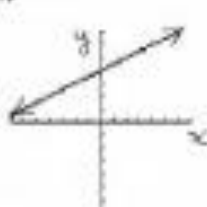
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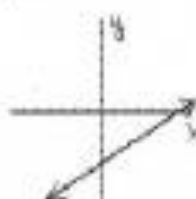
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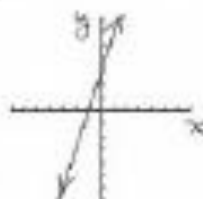
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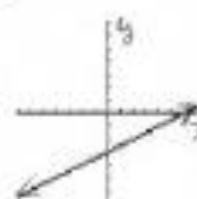
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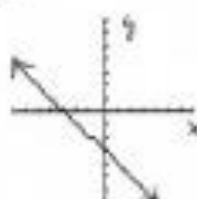
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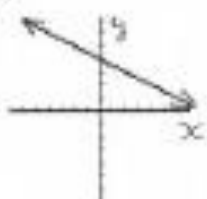
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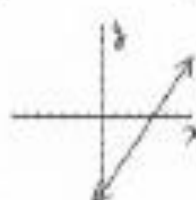
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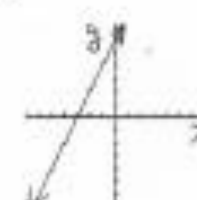
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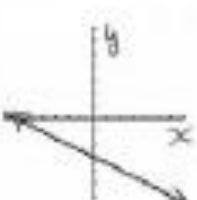
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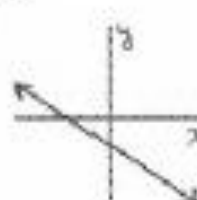
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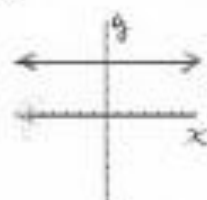
13.



14.



15.



16.



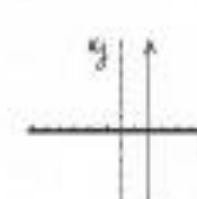
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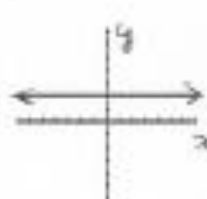
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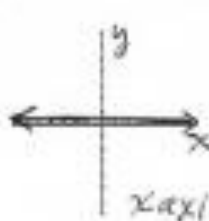
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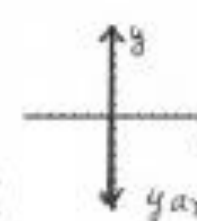
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21.



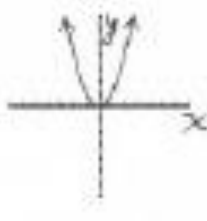
22.



23. horizontal

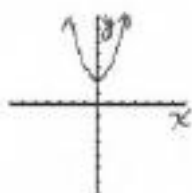
24. vertical, y-int

25.

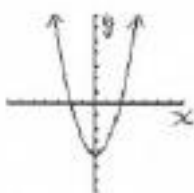


p.319-324:

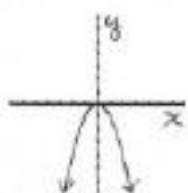
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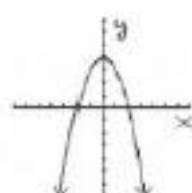
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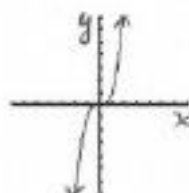
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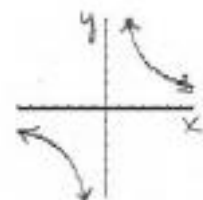
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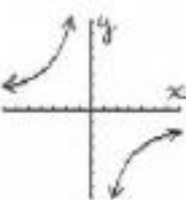
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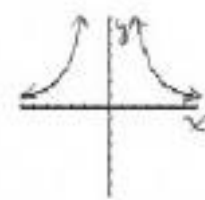
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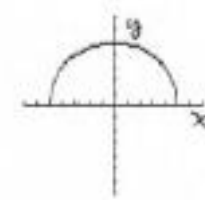
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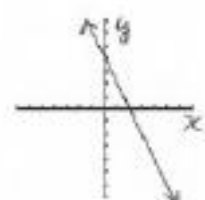
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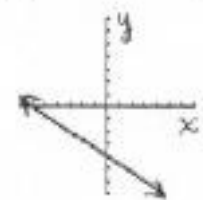
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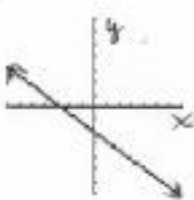
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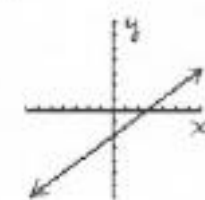
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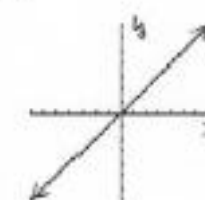
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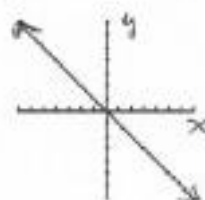
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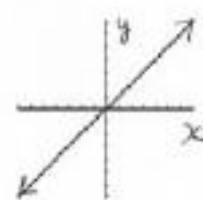
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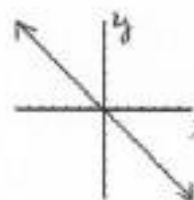
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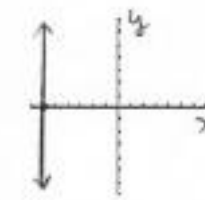
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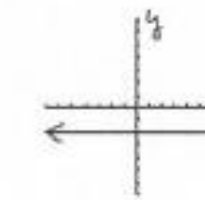
42.



43.



44.



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