

Algebra 1 Senior Final Exam Review

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

Find the slope and y-intercept of the line.

___ 1. $14x + 4y = 24$

a. $-\frac{2}{7}; 6$

b. $-\frac{7}{2}; 6$

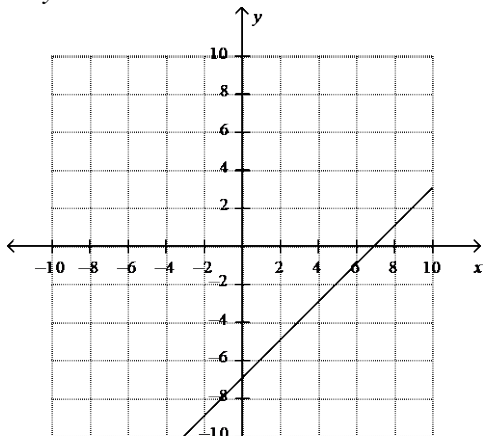
c. $-\frac{7}{2}; \frac{1}{6}$

d. $\frac{7}{2}; -6$

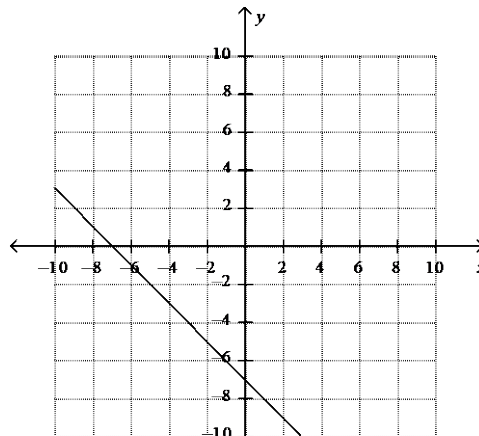
Match the equation with its graph.

___ 2. $-7x + 7y = -49$

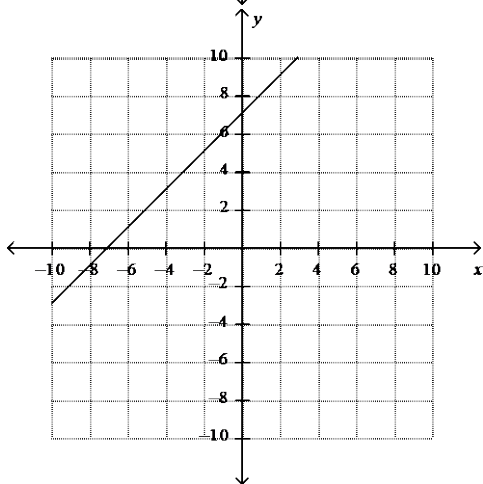
a.



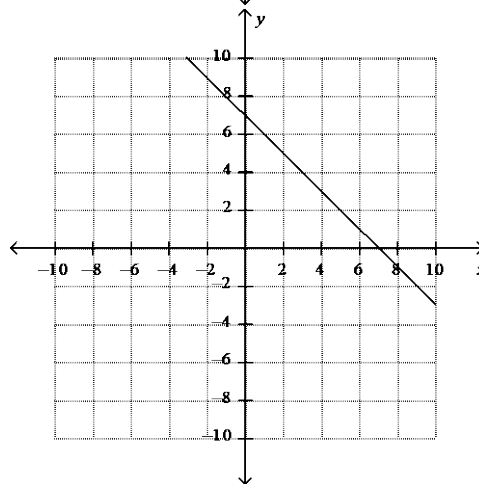
c.



b.



d.



Are the graphs of the lines in the pair parallel? Explain.

___ 3. $y = 5x + 6$

$$-18x + 3y = -54$$

- No, since the slopes are different.
- Yes, since the slopes are the same and the y-intercepts are different.
- No, since the y-intercepts are different.
- Yes, since the slope are the same and the y-intercepts are the same.

Tell whether the lines for each pair of equations are *parallel*, *perpendicular*, or *neither*.

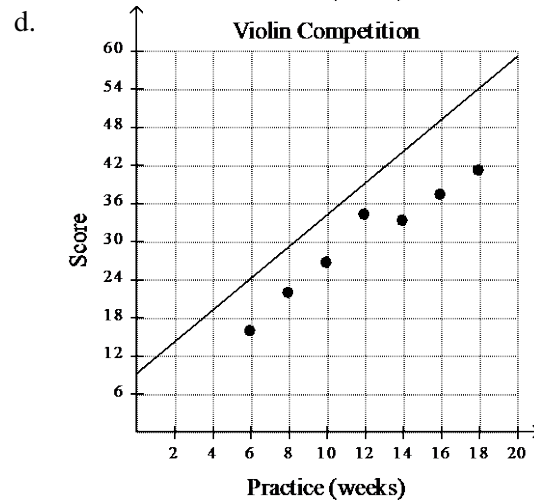
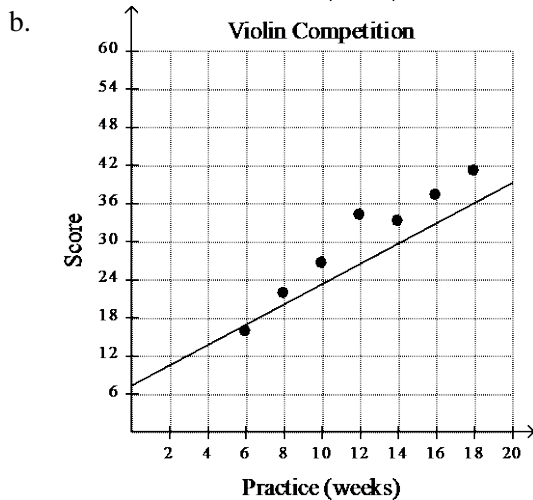
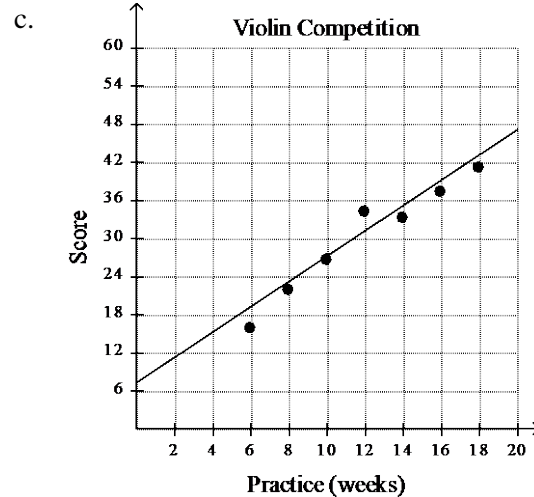
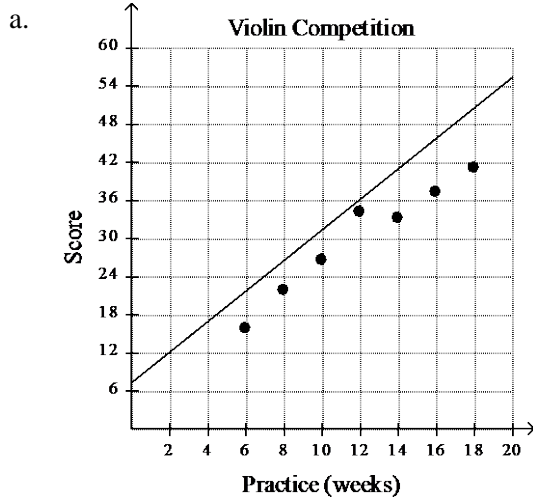
___ 4. $y = -\frac{1}{2}x - 11$

$$16x - 8y = -8$$

- neither
- perpendicular
- parallel

- ___ 5. Which graph shows the best trend line for the following data.

Practice (weeks)	6	8	10	12	14	16	18
Score	15.5	21.5	26.5	34	33	37	41



Write an equation for each translation of $y = |x|$.

- ___ 6. 6 units left

a. $y = |x + 6|$

b. $y = |x - 6|$

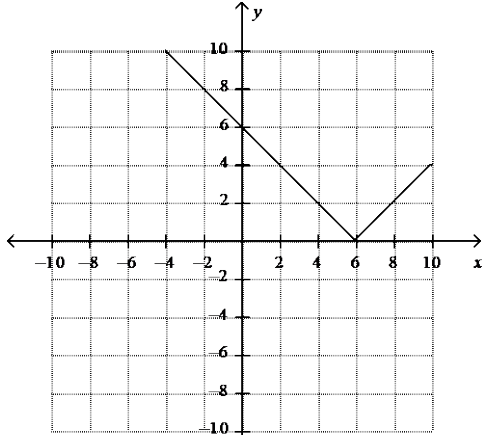
c. $y = |x / + 6|$

d. $y = |x / - 6|$

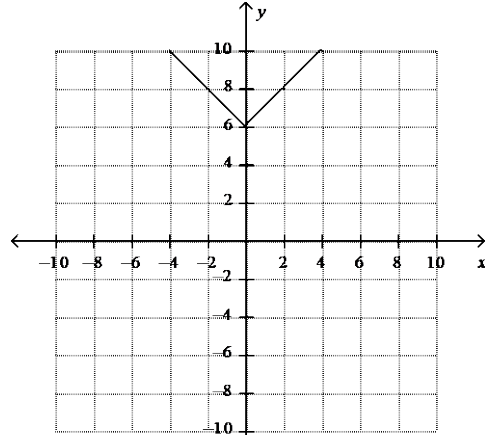
Graph each equation by translating $y = |x|$.

7. $y = |x + 6|$

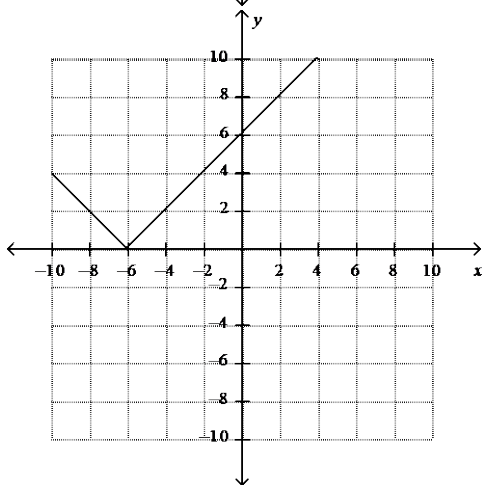
a.



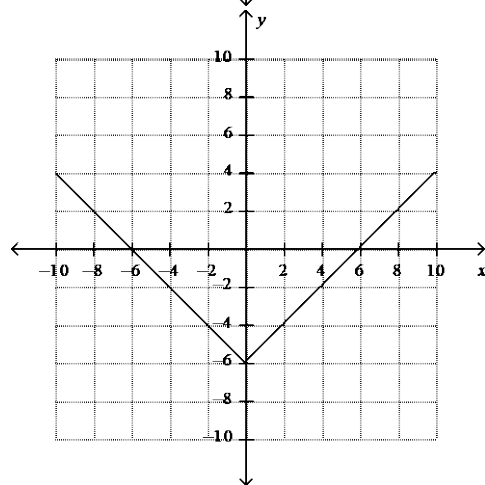
c.



b.



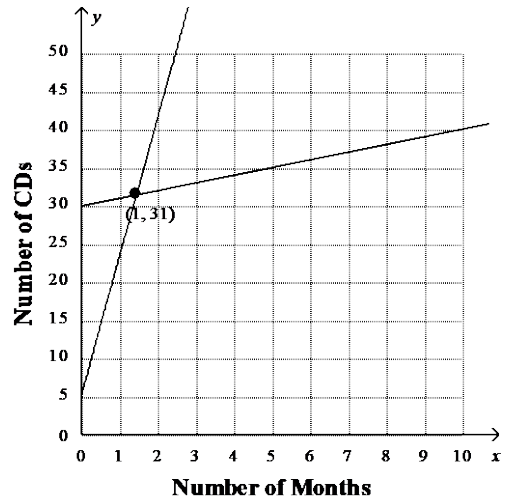
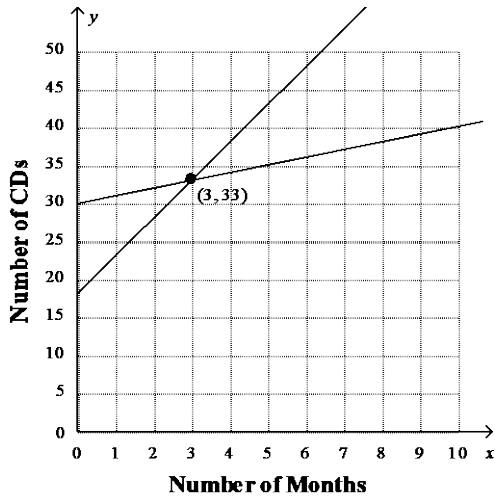
d.



8. Tom has a collection of 30 CDs and Nita has a collection of 18 CDs. Tom is adding 1 CD a month to his collection while Nita is adding 5 CDs a month to her collection. Write and graph a system to find the number of months after which they will have the same number of CDs. Let x represent the number of months and y the number of CDs.

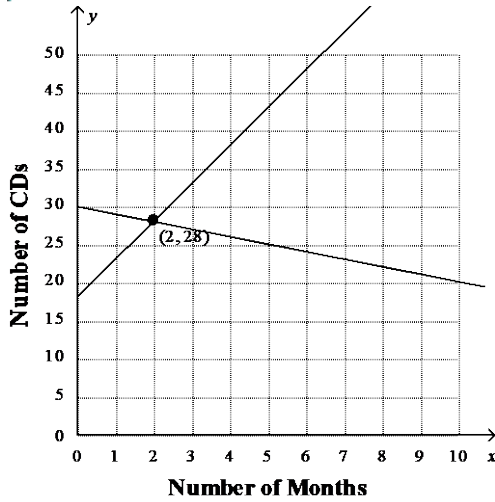
a. $y = x + 30$
 $y = 5x + 18$

c. $y = x + 30$
 $y = 18x + 5$



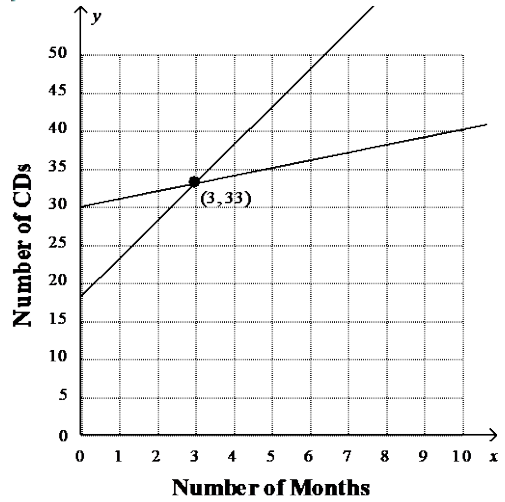
3 months

b. $y = -x + 30$
 $y = 5x + 18$



1 month

d. $y = x + 18$
 $y = 5x + 30$

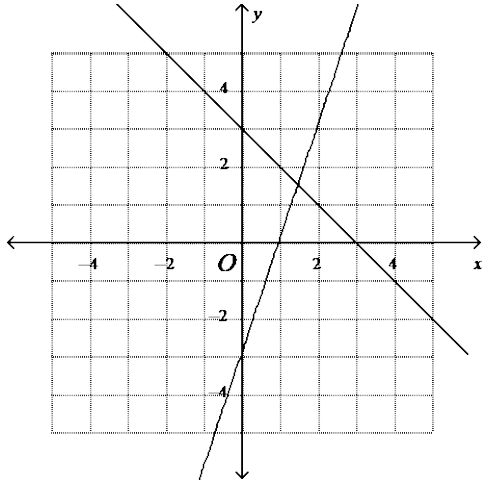


2 months

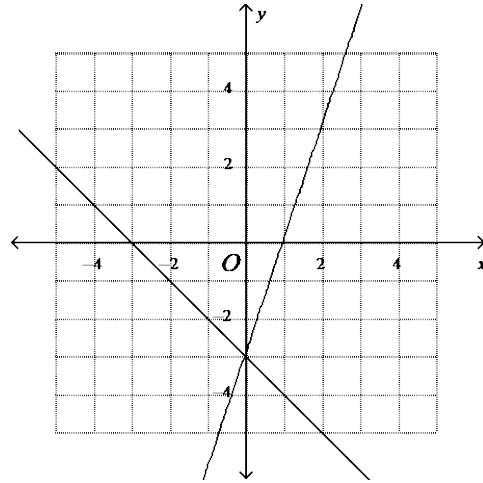
33 months

9. Which graph represents the following system of equations?
 $y = 3x + 3$
 $y = -x - 3$

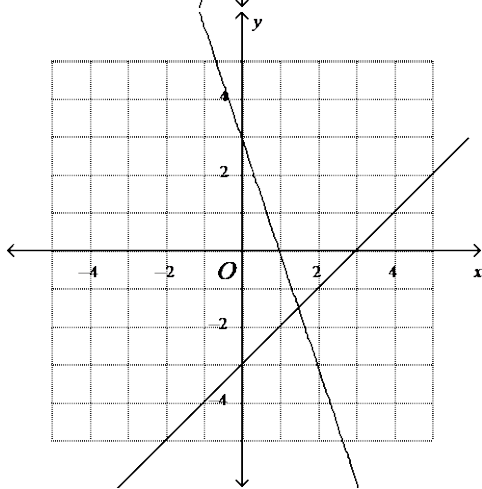
a.



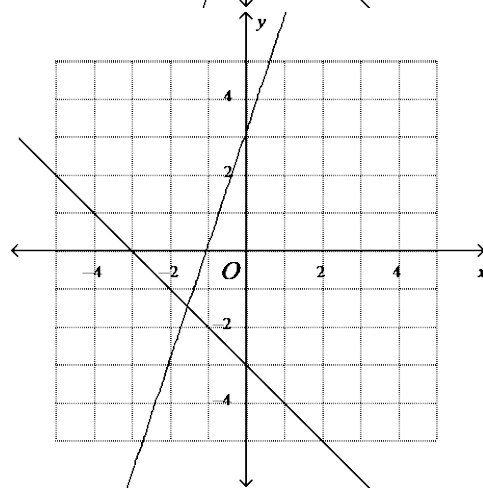
c.



b.



d.



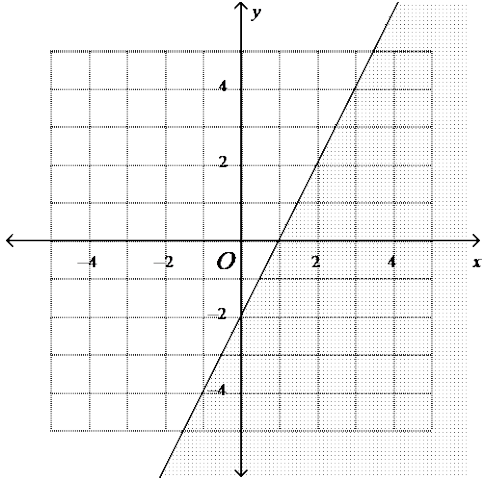
Solve the system of equations using substitution.

- ___ 10. $y = 2x + 3$
 $y = 3x + 1$
 a. $(-2, -1)$ b. $(-1, -2)$ c. $(2, 7)$ d. $(-2, -5)$
- ___ 11. $y = x + 6$
 $y = -2x - 3$
 a. $(1, 7)$ b. $(-3, 3)$ c. $\left(-6, \frac{3}{2}\right)$ d. $(4, -11)$

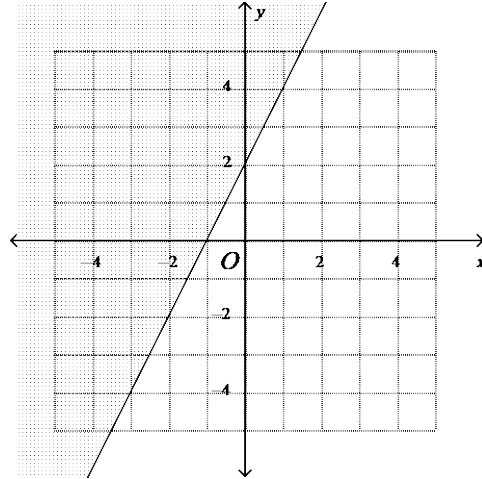
Graph the inequality.

- ___ 12. $y \geq 2x - 2$

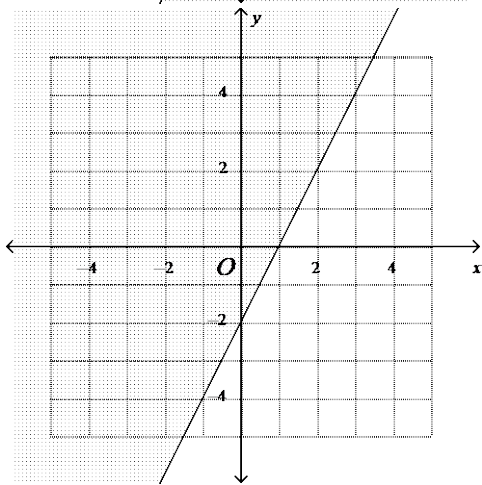
a.



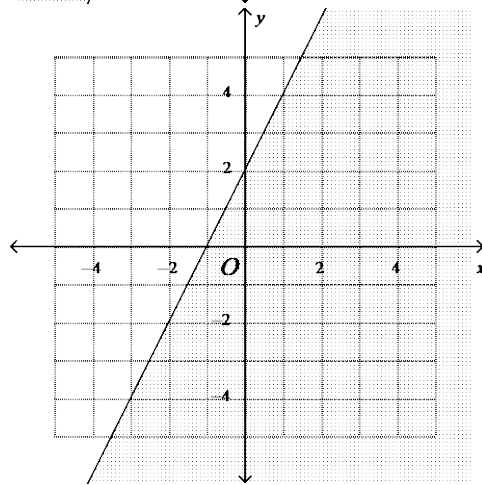
c.



b.



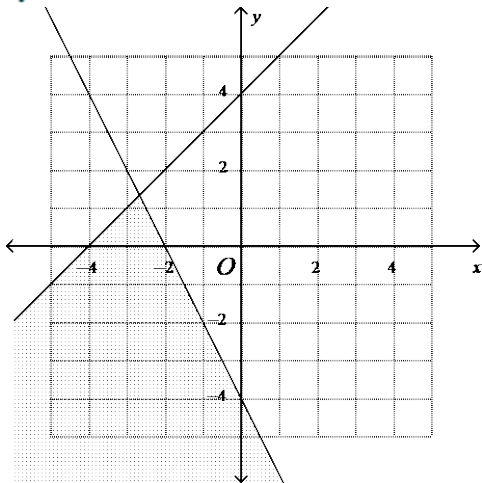
d.



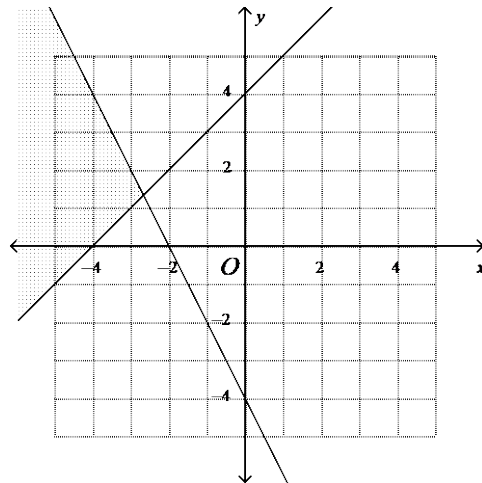
Solve the system of linear inequalities by graphing.

13. $y \leq x + 4$
 $2x + y \leq -4$

a.



c.



23. Radio signals travel at a rate of 3×10^8 meters per second. How many seconds will it take for a radio signal to travel from a satellite to the surface of the Earth if the satellite is orbiting at a height of 3.6×10^7 meters?
- a. 8.3 seconds c. 1.08×10^{15} seconds
b. 1.2×10^{-1} seconds d. 10.8×10^{15} seconds
24. Suppose an investment of \$6,600 doubles in value every 8 years. How much is the investment worth after 40 years?
- a. \$211,200 c. \$66,000
b. \$105,600 d. \$528,000

Match the table with the function that models the data.

25.

x	y
1	4
2	16
3	64
4	256

a. $y = x^4$

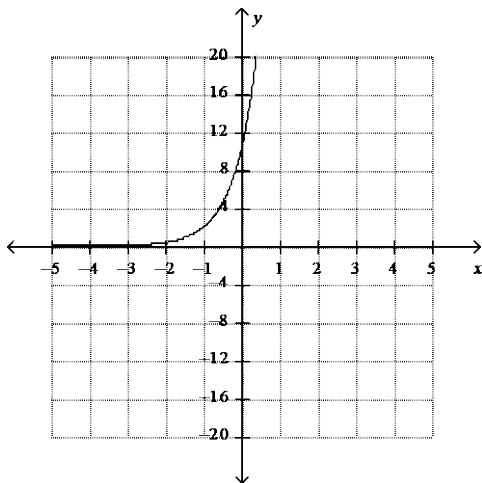
b. $y = 4x$

c. $y = 4^x$

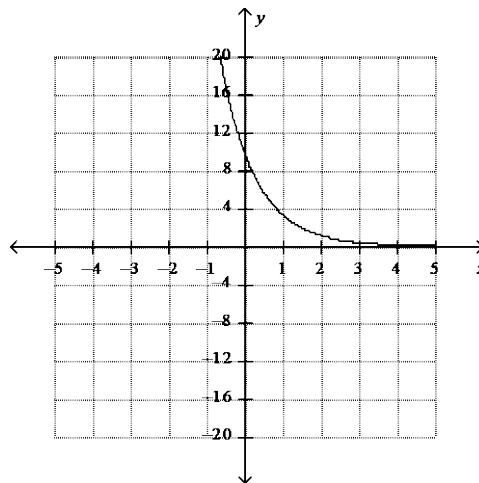
Match the function rule with the graph of the function.

26. $y = 10 \cdot 3^x$

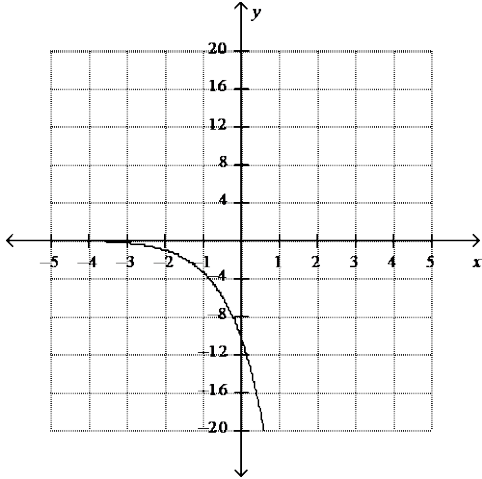
a.



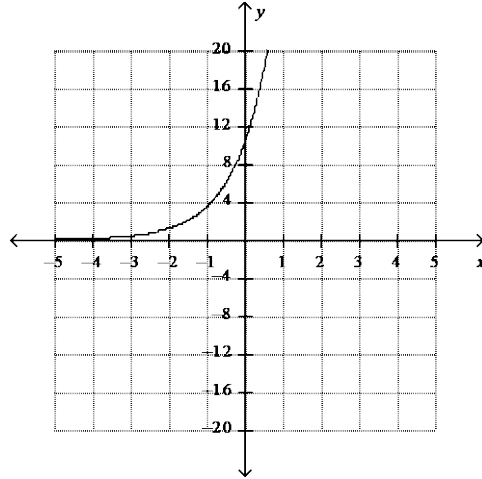
c.



b.

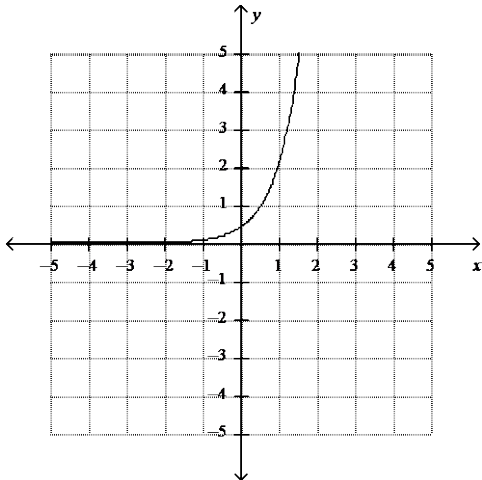


d.

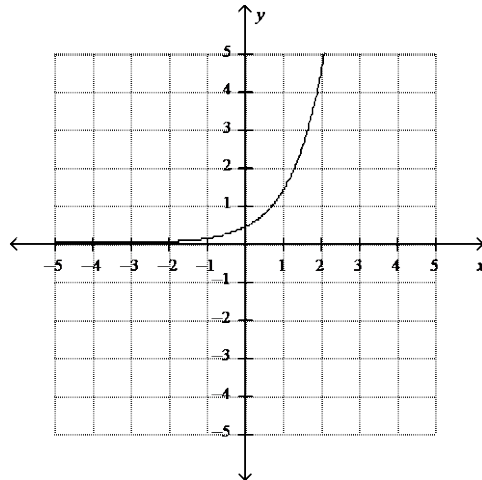


27. $y = \frac{2}{5} \cdot 5^x$

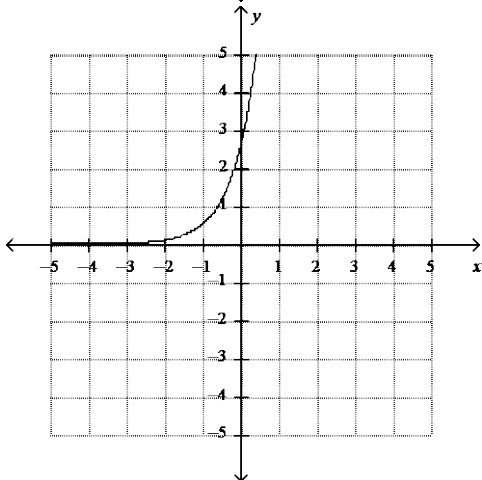
a.



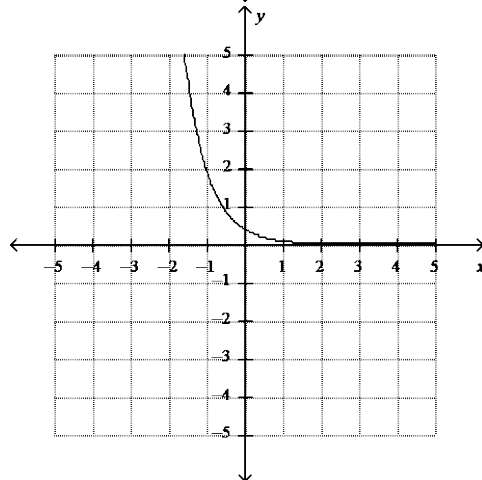
c.



b.



d.



28. Which of the quadratic functions has the narrowest graph?

a. $y = -x^2$

b. $y = \frac{1}{4}x^2$

c. $y = 4x^2$

d. $y = \frac{1}{9}x^2$

29. Which of the quadratic functions has the widest graph?

a. $y = \frac{1}{3}x^2$

b. $y = -4x^2$

c. $y = 0.3x^2$

d. $y = -\frac{4}{5}x^2$

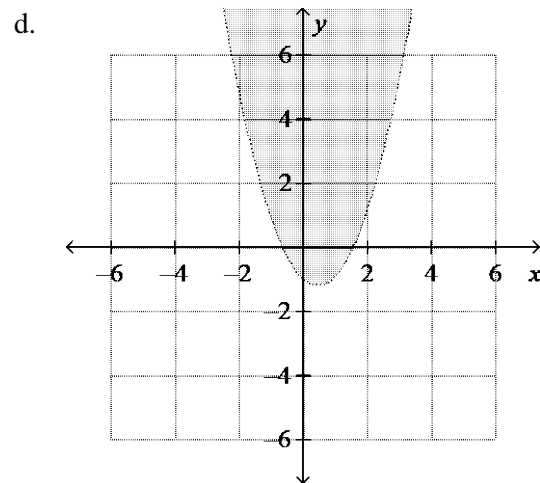
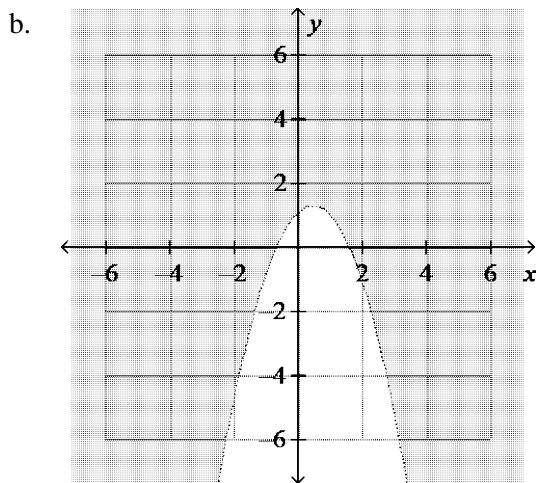
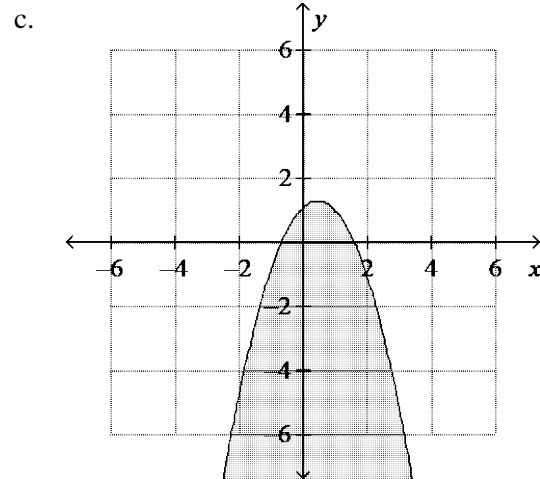
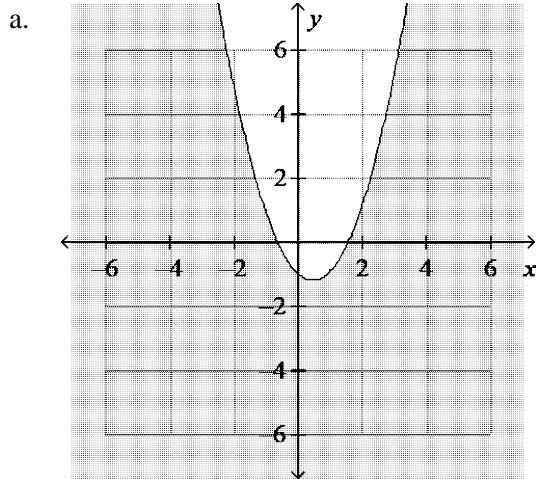
___ 30. If $|m| > |n|$, then the graph of $y = mx^2$ is _____ narrower than $y = nx^2$.

- a. always b. sometimes c. never

___ 31. A parabola _____ has an axis of symmetry.

- a. always b. sometimes c. never

___ 32. Graph $f(x) \leq x^2 - x - 1$.



___ 33. Simplify $\sqrt{\frac{144}{49}}$.

- a. $\frac{144}{7}$ b. $\frac{12}{49}$ c. $\frac{49}{12}$ d. $\frac{12}{7}$

___ 34. The principal square root of a positive real number is _____ negative.

- a. always b. sometimes c. never

___ 35. Is $\sqrt{\frac{5}{8}}$ rational or irrational?

- a. rational b. irrational

- ___ 36. Is $\sqrt{13}$ rational or irrational?
 a. rational b. irrational
- ___ 37. The expression $\sqrt{\frac{a}{b}}$ is _____ rational if a and b are integers and $b \neq 0$.
 a. always b. sometimes c. never
- ___ 38. The quadratic equation $x^2 + a = 0$, where $a > 0$, _____ has at least one real number solution.
 a. always b. sometimes c. never

Solve the equation using square roots.

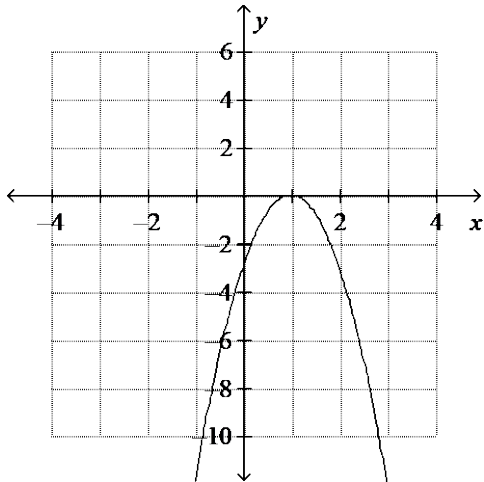
- ___ 39. $x^2 + 20 = 4$
 a. $\sqrt{24}$ c. $\pm\sqrt{24}$
 b. -4 d. no real number solutions

Solve the equation by factoring.

- ___ 40. $c^2 - 4c = 0$
 a. $c = 0$ or $c = -4$ c. $c = 0$ or $c = 4$
 b. $c = 0$ or $c = \sqrt{4}$ d. $c = 1$ or $c = -\sqrt{4}$
- ___ 41. The expression $ax^2 - bx = 0$ _____ has the solution $x = 0$.
 a. always b. sometimes c. never

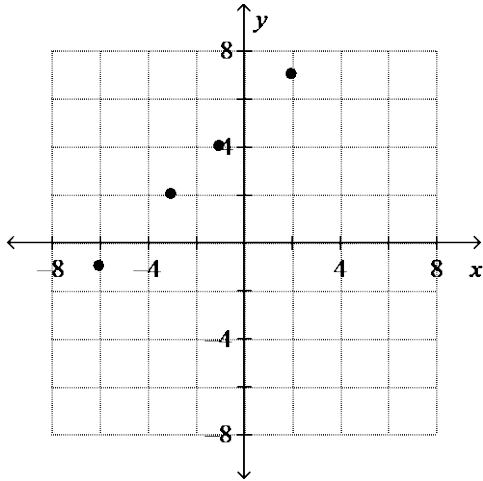
Use the quadratic formula to solve the equation. If necessary, round to the nearest hundredth.

- ___ 42. $5y^2 - 8y = 2$
 a. 1.82, -0.22 b. 11.2, -9.6 c. 3.64, -0.44 d. 0.22, -1.82
- ___ 43. For which discriminant is the graph possible?

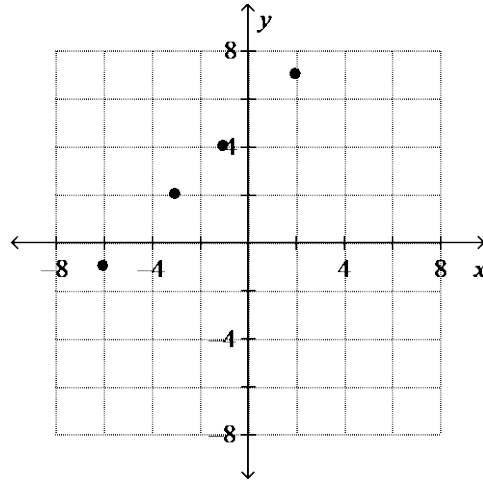


- a. $b^2 - 4ac = -4$ b. $b^2 - 4ac = 3$ c. $b^2 - 4ac = 0$
- ___ 44. Graph the set of points. Which model is most appropriate for the set?
 $(-6, -1), (-3, 2), (-1, 4), (2, 7)$

a.

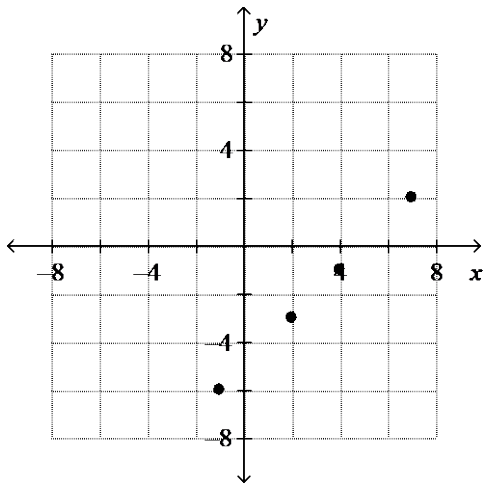


c.



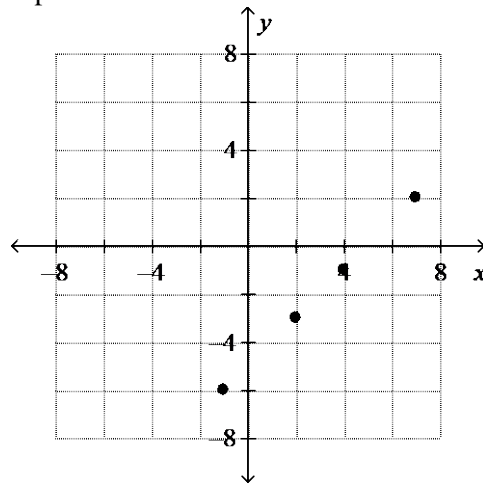
linear

b.



exponential

d.

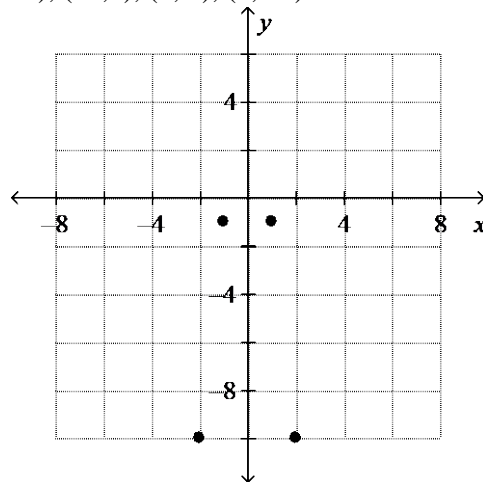


quadratic

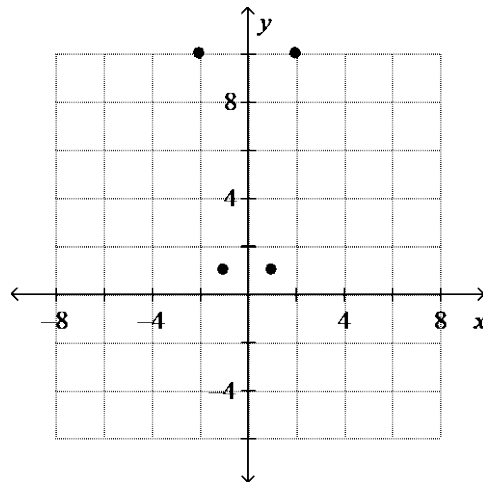
linear

45. Graph the set of points. Which model is most appropriate for the set?
 $(-2, 10), (-1, 1), (1, 1), (2, 10)$

a.



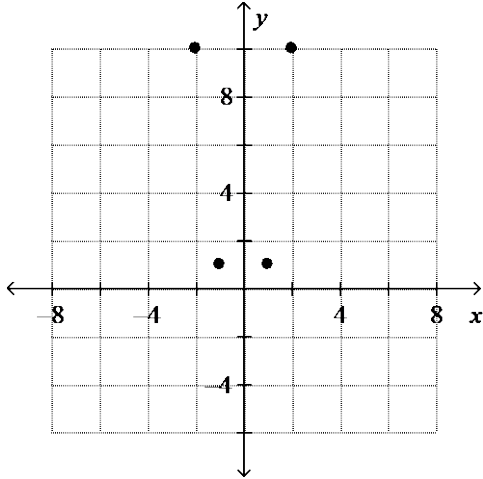
c.



quadratic

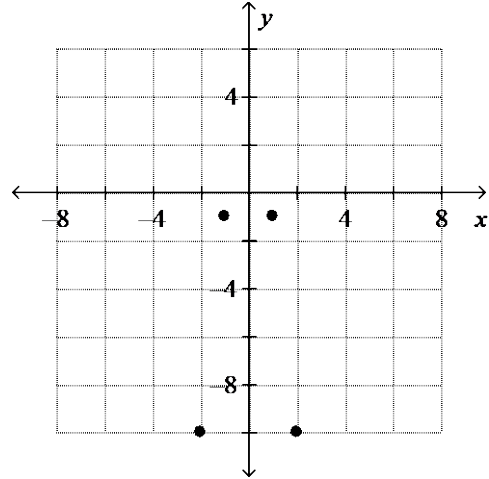
linear

b.



quadratic

d.

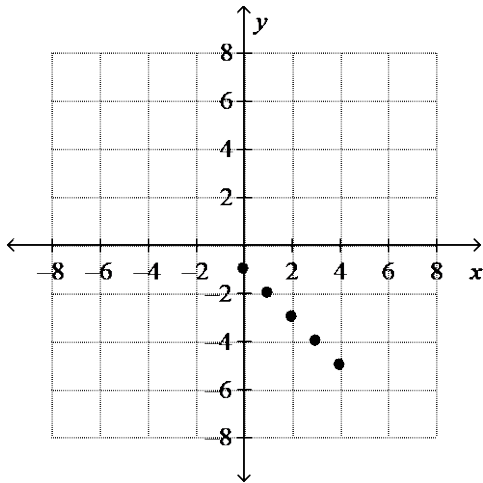


exponential

46. Which kind of function best models the data in the table? Graph the data and write an equation to model the data.

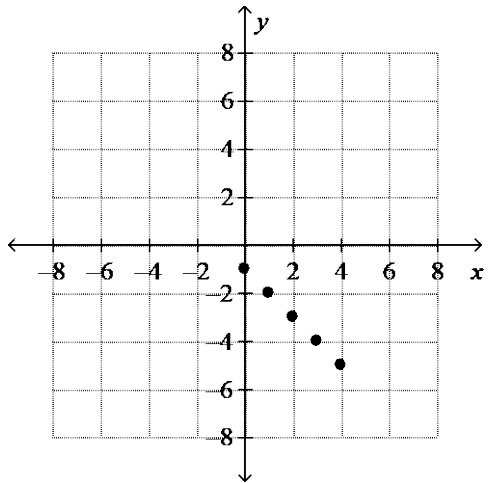
x	y
0	-1
1	-2
2	-3
3	-4
4	-5

a.



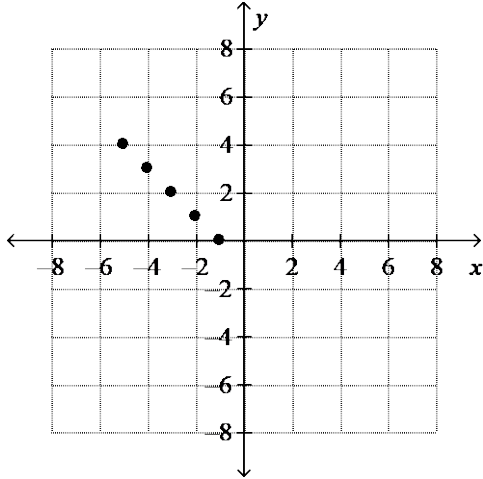
exponential; $y = 3^x - 1$

c.



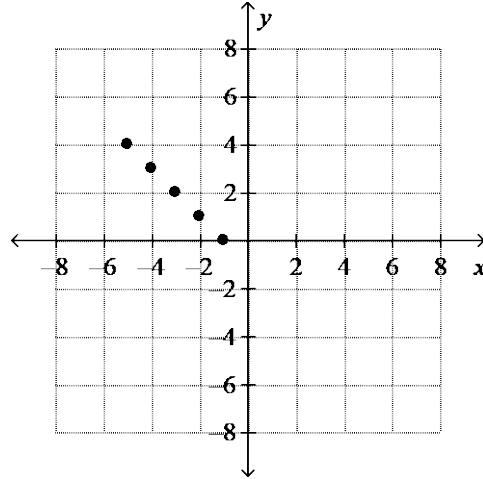
linear; $y = -x - 1$

b.



quadratic; $y = x^2 - 1$

d.

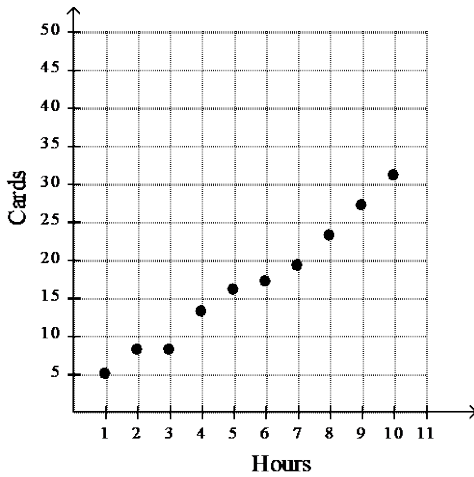


linear; $y = x - 1$

- ___ 47. In an exponential model, the y values ___ decrease as the x values increase.
 a. always b. sometimes c. never
- ___ 48. The equation $x^2 + n = 0$ ___ has at least one real number solution when $n > 0$.
 a. always b. sometimes c. never

Short Answer

49. Gloria makes and sells handmade greeting cards. The scatter plot shows the number of cards she made over a 10-hour period. Find the equation of a trend line and use it to predict the number of cards Gloria can make in 12 hours.



50. Order 34×10^2 , 1.2×10^7 , 8.11×10^{-3} , and 435 from least to greatest.