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A2H Semester 1 Review

Practice Final

1. Write the equation $y = -x^2 + 4x - 8$ in the form $y = a(x - h)^2 + k$.

[A] $y = -(x - 4)^2 + 4$

[B] $y = (x - 2)^2 - 4$

[C] $y = -(x - 2) - 4$

[D] $y = -(x - 2)^2 - 4$

2. Write a quadratic function in vertex form that has the given vertex and passes through the given point.

Vertex: $(-4, -6)$; Point: $(-2, 2)$

[A] $f(x) = \frac{1}{2}(x - 2)^2 + 2$

[B] $f(x) = \frac{1}{2}(x + 2)^2 - 2$

[C] $f(x) = (x - 4)^2 + 6$

[D] $f(x) = 2(x + 4)^2 - 6$

3. Use the quadratic formula to solve: $2x^2 + 3x - 1 = 0$

[A] $\frac{3 + \sqrt{2}}{4}, \frac{3 - \sqrt{2}}{4}$

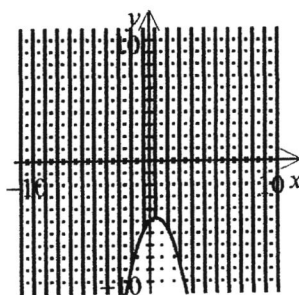
[B] $\frac{-3 + \sqrt{2}}{4}, \frac{-3 - \sqrt{2}}{4}$

[C] $\frac{-3 + \sqrt{17}}{4}, \frac{-3 - \sqrt{17}}{4}$

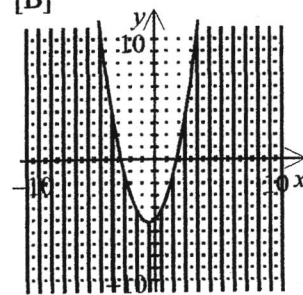
[D] $\frac{3 + \sqrt{17}}{4}, \frac{3 - \sqrt{17}}{4}$

4. Which is the graph of $y \leq -5 + x + x^2$?

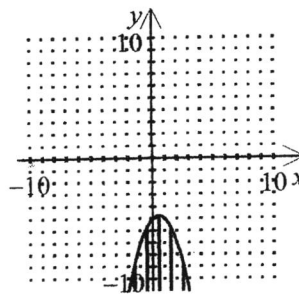
[A]



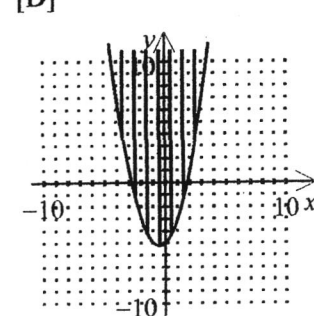
[B]



[C]



[D]



5. Solve by completing the square: $x^2 + 4x - 32 = 0$

[A] $-8, -4$

[B] $8, -4$

[C] $8, 4$

[D] $-8, 4$

Write the expression as a complex number in standard form.

6. $(9 - 3i) + (-4 - 5i)$

[A] $5 - 8i$

[B] $13 + 2i$

[C] $-51 - 33i$

[D] $5 + 8i$

Write the expression as a complex number in standard form.

7. $\frac{8 + 4i}{2 - 5i}$

[A] $\frac{36}{29} - \frac{32}{29}i$

[B] $-\frac{4}{29} + \frac{48}{29}i$

[C] $4 + \frac{4}{5}i$

[D] $\frac{4}{21} - \frac{16}{7}i$

8. Factor the expression: $49y^2 - 25$

- [A] $(7y-5)(7y-5)$
- [B] $(49y+1)(y-25)$
- [C] $(7y+5)(7y+5)$
- [D] $(7y+5)(7y-5)$

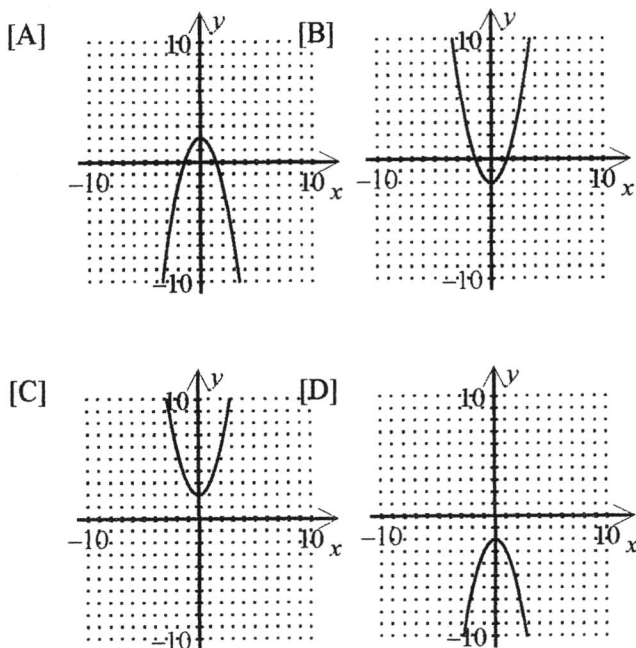
9. What are the solutions to the equation?

$$x^2 + 6x - 16 = 0$$

- [A] $x = 16$ or $x = -1$
- [B] $x = 1$ or $x = -16$
- [C] $x = 8$ or $x = -2$
- [D] $x = 2$ or $x = -8$

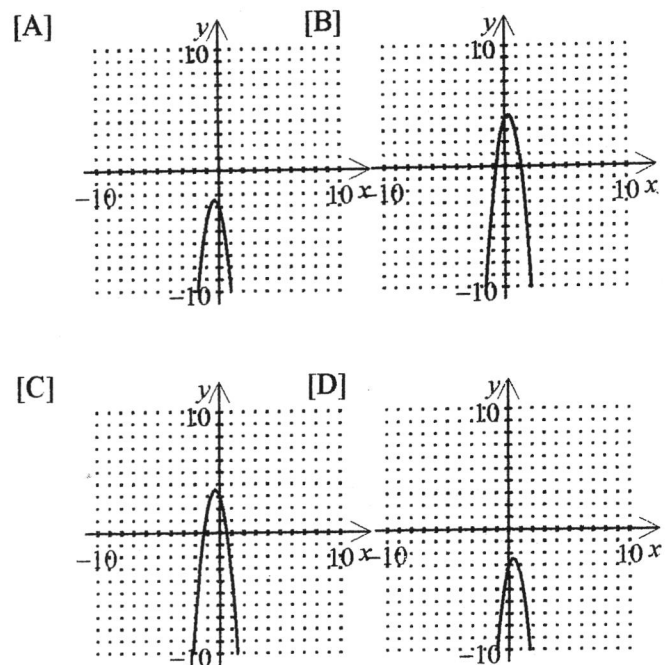
Graph:

$$10. y = x^2 + 2$$



Graph:

$$11. y = -4x^2 - 3x + 3$$



12. Use an augmented matrix to solve the system:

$$x + 2y + z = 5$$

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

$$x + y - z = 11$$

- [A] $(5, 2, -4)$
- [B] $(5, -2, 4)$
- [C] $(6, 2, -5)$
- [D] $\left(4, \frac{1}{2}, -3\right)$

13. Find the inverse of the matrix (if it exists) $\begin{bmatrix} -3 & -3 \\ -2 & 4 \end{bmatrix}$.

- [A] $\begin{bmatrix} 4 & -2 \\ -3 & -3 \end{bmatrix}$
- [B] $\begin{bmatrix} \frac{1}{6} & -\frac{1}{9} \\ -\frac{1}{6} & -\frac{2}{9} \end{bmatrix}$

- [C] $\begin{bmatrix} -\frac{2}{9} & -\frac{1}{6} \\ -\frac{1}{9} & \frac{1}{6} \end{bmatrix}$

[D] A^{-1} does not exist.

14. Given $A = \begin{bmatrix} 0 & -2 & 1 \\ 3 & -1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -1 \\ 0 & 1 \\ -1 & -1 \end{bmatrix}$, find AB .

[A] $\begin{bmatrix} -3 & -1 & 1 \\ 3 & -1 & 0 \\ -3 & 3 & 0 \end{bmatrix}$

[B] $\begin{bmatrix} -1 & -3 \\ 3 & -4 \end{bmatrix}$

[C] $\begin{bmatrix} 0 & -3 \\ 0 & -1 \\ 0 & 0 \end{bmatrix}$

[D] $\begin{bmatrix} -1 & 3 \\ -3 & -4 \end{bmatrix}$

15. Evaluate the determinant of the matrix. $\begin{vmatrix} 3 & 4 & 4 \\ 2 & 1 & 3 \\ 5 & 5 & 2 \end{vmatrix}$

[A] -23
[C] 25

[B] -25
[D] 23

16. Solve the system of equations:

$$\begin{aligned} x + y + z &= -8 \\ -2x - y + z &= 3 \\ x - 2y - z &= 10 \end{aligned}$$

[A] (-1, -4, -3)
[C] (1, 4, 3)

[B] (-3, -4, -1)
[D] (3, 4, 1)

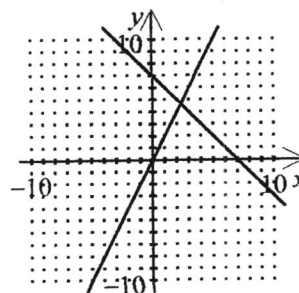
17. Tickets to a local movie were sold at \$5.00 for adults and \$3.50 for students. If 390 tickets were sold for a total of \$1695.00, how many student tickets were sold?

[A] 50
[C] 170

[B] 220
[D] 235

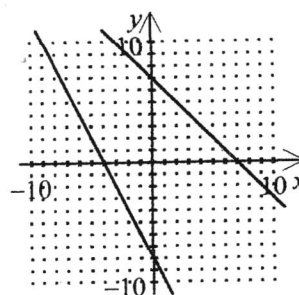
18. Solve the system by graphing: $x + y = 7$
 $y = 2x - 8$

[A]



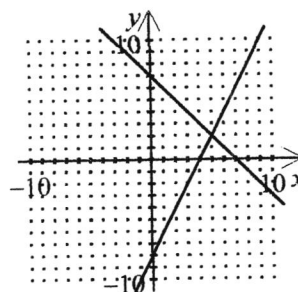
$\left(\frac{7}{3}, \frac{14}{3}\right)$

[B]



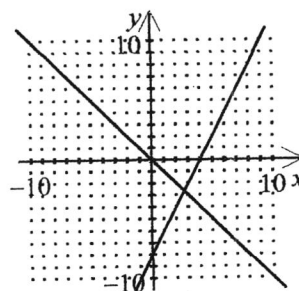
$(-15, 22)$

[C]



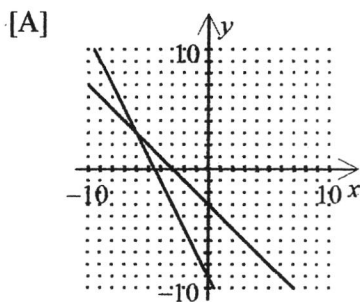
$(5, 2)$

[D]

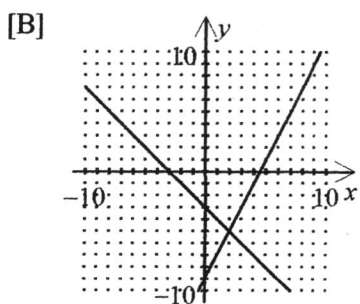


$\left(\frac{8}{3}, -\frac{8}{3}\right)$

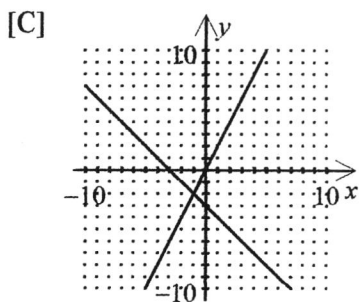
19. Solve the system by graphing: $x + y = -3$
 $y = 2x - 9$



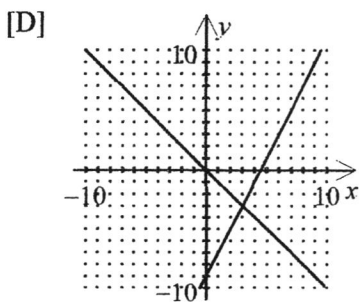
$(-6, 3)$



$(2, -5)$



$(-1, -2)$



$(3, -3)$

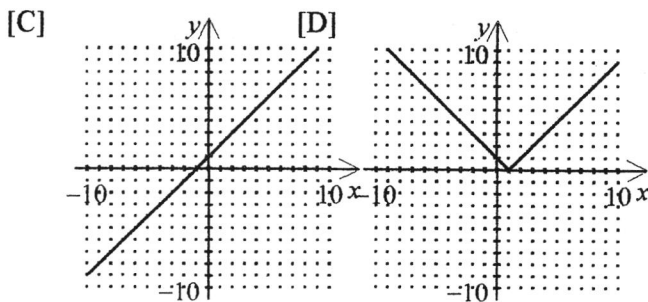
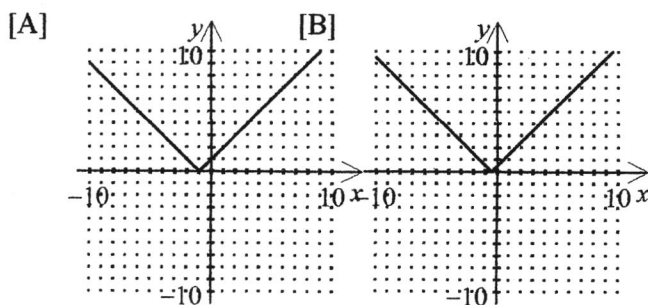
20. A rental car agency charges \$13 per day plus 13 cents per mile to rent a certain car. Another agency charges \$16 per day plus 6 cents per mile to rent the same car. How many miles per day will have to be driven for the cost of a car from the first agency to equal the cost of a car from the second agency?

- [A] 41.43 miles per day
 [B] 428.57 miles per day
 [C] 42.86 miles per day
 [D] 414.29 miles per day

21. Solve the linear system: $3x + 4y = -19$
 $-3x + y = -1$

- [A] $(0, -1)$ [B] $\left(-4, -\frac{7}{4}\right)$
 [C] no solution [D] $(-1, -4)$

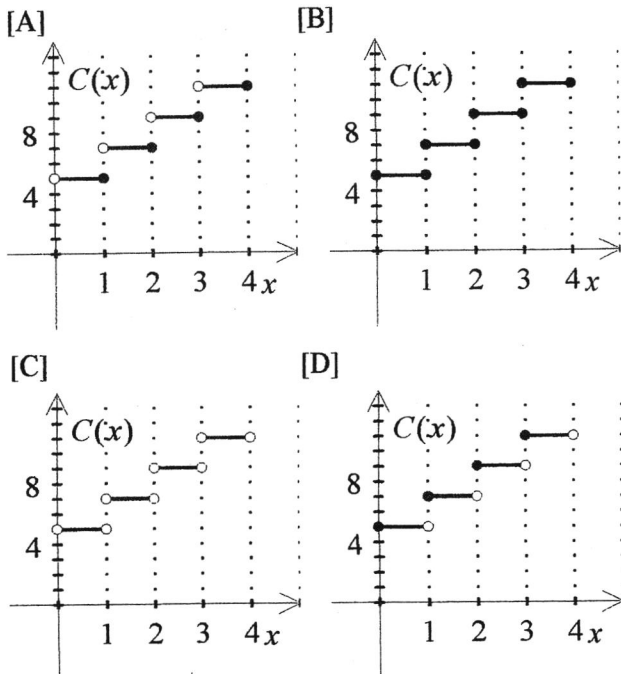
22. Graph the function defined by $y = |x + 1|$.



23. Express Package Delivery Service uses the weight of a package to determine the charge for delivery. The charge is \$5 for the first pound (or any fraction thereof) and \$2 for each additional pound (or fraction thereof) up to 8 pounds. If $C(x)$ is the charge for delivering a package weighing x pounds, then

$$C(x) = \begin{cases} 5 & \text{for } 0 < x \leq 1 \\ 7 & \text{for } 1 < x \leq 2 \\ 9 & \text{for } 2 < x \leq 3 \end{cases}$$

and so on. Graph C for $0 < x \leq 4$.

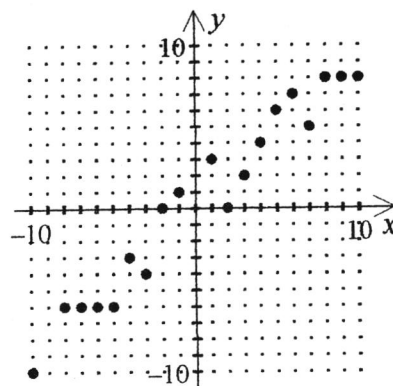


24. For the data given, find the equation of the line of best fit.

x	1	2	6	8	10
y	2	5	4	5	6

- [A] $y = 0.304x + 2.83$
 [B] $y = 0.304x + 4.72$
 [C] $y = 0.29x + 2.83$
 [D] $y = 0.29x + 4.72$

25. Describe the correlation shown by the scatter plot?



- [A] weak negative correlation
 [B] weak positive correlation
 [C] strong positive correlation
 [D] strong negative correlation

26. Write the standard form of the equation of the line that has slope 2 and passes through the point $(4, -6)$.

- [A] $x - 2y = 16$
 [B] $-2x - y = -14$
 [C] $2x - y = 14$
 [D] $-x + 2y = -16$

27. Find the slope of the line passing through the points $(-1, -8)$ and $(6, 4)$.

- [A] $-\frac{1}{4}$ [B] $\frac{7}{12}$
 [C] $\frac{12}{7}$ [D] $-\frac{4}{5}$

28. Solve: $|x - 1| \geq 2$

- [A] $-1 < x < 3$
 [B] $-1 \leq x \leq 3$
 [C] $x < -1$ or $x > 3$
 [D] $x \leq -1$ or $x \geq 3$

29. For a door to meet specifications at a carpentry shop the width must be within $\frac{1}{4}$ inch of the expected width of the door. The shop gets an order for doors that are 4 feet wide. Which of the following is an inequality that expresses the range of widths for acceptable doors?

[A] $|x - 48| \leq \frac{1}{4}$

[B] $|x + 48| \leq \frac{1}{4}$

[C] $\left|x + \frac{1}{4}\right| \leq 4$

[D] $|x - 4| \leq \frac{1}{4}$

30. Which of the following is a function?

[A] $\{(3, -4), (5, -4), (6, -4)\}$

[B] $\{(-4, 6), (-4, -1), (-1, 3)\}$

[C] $x = y^2 - 1$

[D] $5x^2 + 2y^2 + 6 = 9$

31. Solve: $x - 3 \leq 5$ or $x + 4 \geq 14$

[A] $x \leq 8$ or $x \geq 10$

[B] $8 \leq x \leq 10$

[C] $x \geq 10$

[D] $x \leq 8$

Simplify:

32. $11(x - 1) + 3(x - 1)$

[A] $11x + 14$

[B] $11x + 8$

[C] $14x - 14$

[D] $14x - 8$

33. $-4 + 8x^2y - 5xy - 6x^2y + 3xy - 2$

[A] $2x^4y^2 + 2xy + 6$

[B] $14x^2y - 8xy - 6$

[C] $14x^2y - 8x^2y^2 + 6$

[D] $2x^2y - 2xy - 6$

34. Solve for b : $K = 8a^2b$.

[A] $b = \frac{8a^2}{K}$

[B] $b = \frac{K}{8a^2}$

[C] $b = K - 8a^2$

[D] $b = \frac{K}{8a}$

35. Which of the properties of real numbers is illustrated below?

$(a + b) + c = a + (b + c)$

[A] distributive law

[B] commutative law

[C] inverse law

[D] associative law