Name: _____

Entering Algebra 2

Directions: Circle the number of the correct answer choice.

1. Describe the number and type of roots for the equation: $2x^2 + 7 = 12x + 4$.

1. 2 real, rational roots
2. 2 real, irrational roots
3. 1 real, rational root
4. 2 imaginary roots

2. Find the solution(s) to the equation $\frac{x-4}{x-3} = \frac{9}{x-3} - \frac{1}{4}$.

1. $x = 55$
2. $x = 11$
3. $x = 3$
4. $x = 4$

3. Find the solution(s) to the equation $\frac{3}{x^2+5x+6} + \frac{x-1}{x+2} = \frac{7}{x+3}$.

1. –7 and 2
2. –2
3. –2 and 7
4. 7

4. Which of the following systems of equations has many solutions?

1. $2x + 3y = 6$
   $y = 2x + 2$

2. $8x - 4y = 12$
   $y = 2x - 3$

3. $y = 4x + 3$
   $y = 4x - 3$

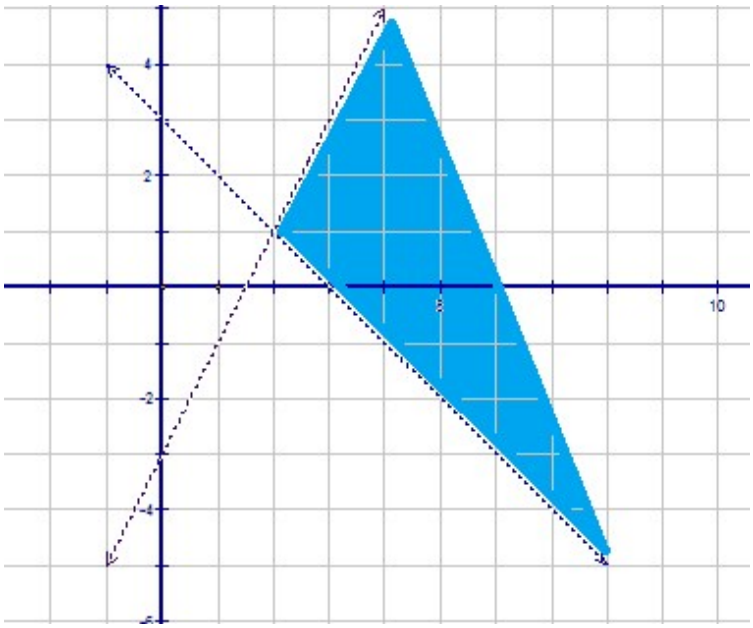
4. $2x + y = 4$
   $-2x - y = 4$

5. Which point is ***not*** a solution to the system of inequalities?

$y > x - 5$
$y \leq -x + 3$

1. (4, -1)
2. (3, 0)
3. (0, 0)
4. (2, -2)

6. Which system of inequalities is shown below in the graph?



1. $y < 2x - 3$
   $y > -x + 3$

2. $y > 2x - 3$
   $y < -x + 3$

3. $y < 2x - 3$
   $y \geq -x + 3$

4. $y \leq 2x - 3$
   $y \geq -x + 3$

7. The solution to a system of linear inequalities is defined by:

$y > 2x - 3$
$y < -x - 6$

In which quadrant(s) of the coordinate plane is the solution located?

1. I, II, III, IV
2. I and IV, only
3. II and III, only
4. I, III, and IV, only

8. For which quadratic equation(s) is the vertex a ***maximum point***?

I. $y = -2x + 5 + 3x^2$

II. $y = 7 + 4x - x^2$

III. $y + 3x^2 = -7x + 2x^2 + 10$

IV. $y = 17 + 0.05x^2 - 10x$

1. I, only
2. II, only
3. II and III, only
4. I and IV, only

9. For what values of x is the function $f(x) = x^2 - 4x - 5$ increasing?

1. $-1 < x < 5$
2. $x > 2$
3. $x < -1$ or $x > 5$
4. $x < 2$

10. What is the slope of the graph of the line $6x - 2y = 15$?

1. -7.5
2. -3
3. 2.5
4. 3

11. What is the perimeter of the isosceles trapezoid that has vertices of $A(-3, 5)$, $B(3, 5)$, $C(5, -3)$, and $D(-5, -3)$?

1. 16 units
2. $16 + 4\sqrt{34}$ units
3. $16 + 4\sqrt{17}$ units
4. $20\sqrt{17}$ units

12. If $\frac{7}{(x+4)} = \frac{k}{2x(x+4)}$, what is the value of k?

1. 14
2. 2
3. $7x$
4. $14x$

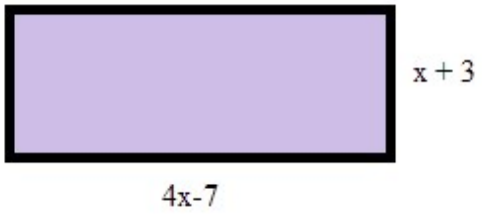
13. What value of c makes $36x^2 + 84x + c$ a perfect square trinomial?

1. 49
2. 7
3. 9
4. 4

14. Which expression is the greatest common factor (GCF) of the terms of the trinomial $12x^7y^9 + 6x^4y^7 - 10x^3y^5$?

1. $6x^7y^9$
2. $2x^3y^5$
3. $6x^3y^5$
4. $2x^{14}y^{21}$

15. Which expression represents the area of the rectangle?



1. $5x - 4$
2. $10x - 8$
3. $4x^2 - 21$
4. $4x^2 + 5x - 21$

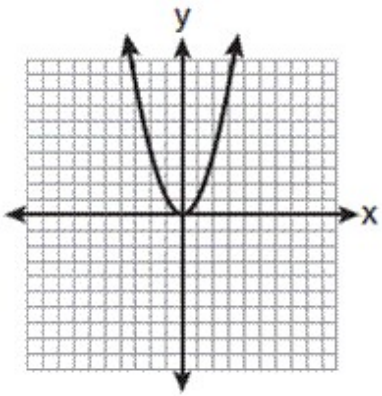
16. What is the simplified form of $\frac{14x^5y^9}{2xy^3}$?

1. $12x^5y^9$
2. $7x^6y^{12}$
3. $7x^4y^6$
4. $7x^5y^3$

17. Solve the equation $8x^3 + 4x^2 - 18x - 9 = 0$ algebraically for all values of x.

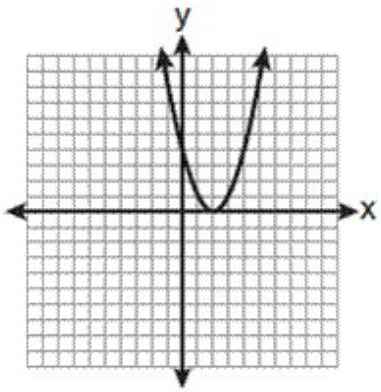
1. $\frac{3}{2}$ and $\frac{1}{2}$
2. $\frac{3}{2}$ and $-\frac{1}{2}$
3. $\pm\frac{3}{2}$ and $-\frac{1}{2}$
4. $\pm\frac{3}{2}$ and $\frac{1}{2}$

18. The graph below shows the function f(x).



Which graph represents the function f(x + 2)?

1.



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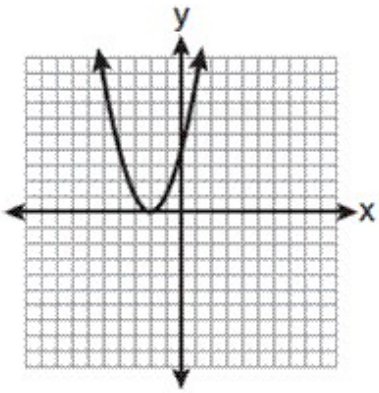

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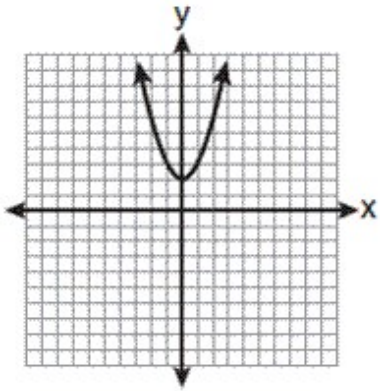
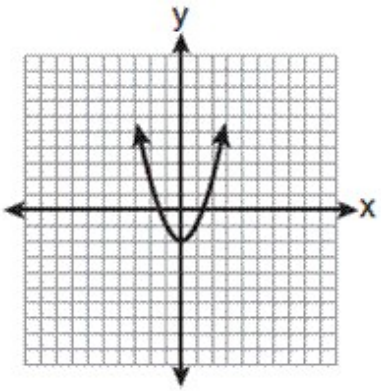


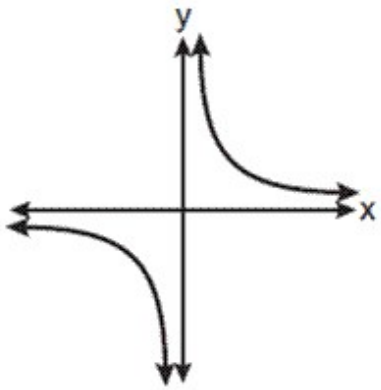
4. 

19. Factored completely, the expression $6x - x^3 - x^2$ is equivalent to

1. $x(x + 3)(x - 2)$
2. $x(x - 3)(x + 2)$
3. $-x(x - 3)(x + 2)$
4. $-x(x + 3)(x - 2)$

20. Which graph does *not* represent a function?

1.



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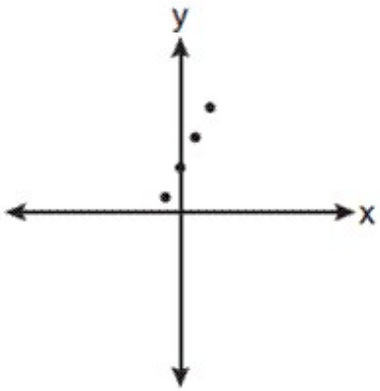

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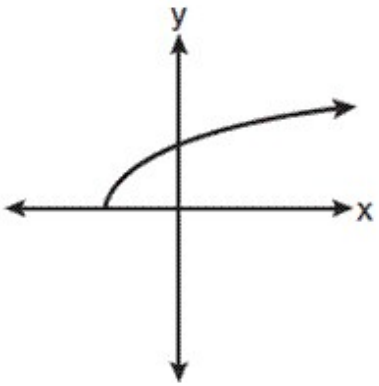
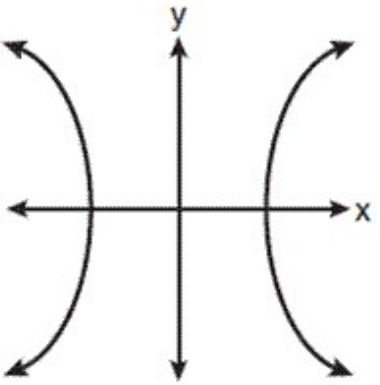


4.



21. Put the following quadratic into vertex form by completing the square: $y = 6x^2 - 2x - 6$.

1. $y = 6\left(x - \frac{1}{6}\right)^2 - \frac{37}{6}$
2. $y = 6\left(x - \frac{1}{6}\right)^2 - \frac{31}{6}$
3. $y = 6\left(x + \frac{1}{6}\right)^2 + \frac{37}{6}$
4. $y = 6\left(x + \frac{1}{6}\right)^2 + \frac{31}{6}$

22. Find the roots of the equation: $y = (x + 5)^2 + 4$

1. $x = 5 \pm \sqrt{-4}$
2. $x = -5 \pm 2i$
3. $x = 5 \pm 2i\sqrt{2}$
4. $x = -5 \pm 2i\sqrt{2}$

23. Which set of ordered pairs does *not* represent a function?

1. {(3,-2), (-2,3), (4,-1), (-1,4)}
2. {(3,-2), (3,-4), (4,-1), (4,-3)}
3. {(3,-2), (4,-3), (5,-4), (6,-5)}
4. {(3,-2), (5,-2), (4,-2), (-1,-2)}

24. Which equation does *not* represent a function?

1. $x = \pi$
2. $y = 4$
3. $y = |x|$
4. $y = x^2 + 5x$

25. The temperature generated by an electrical circuit is represented by $t = f(m) = 0.3m^2$, where m is the number of moving parts. The resistance of the same circuit is represented by $r = g(t) = 150 + 5t$, where t is the temperature. What is the resistance in a circuit that has four moving parts?

1. 51
2. 156
3. 174
4. 8,670