SM2H

Name:_____ Period:_____

SM2H 4.2 HW – Zeroes, Solutions, Roots, and x-intercepts

Find the zeros for each equation or function.

1. $y = -14x^2 + 10x$

2. $f(x) = 16(r-5)^2 - 64$

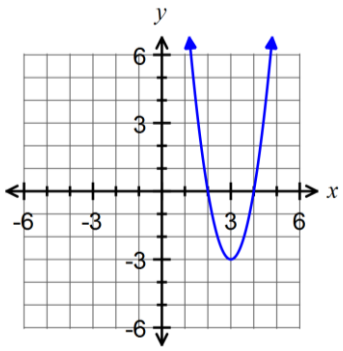
Match the equation to the correct graph.

3. $f(x) = 2(x+2)(x+4)$

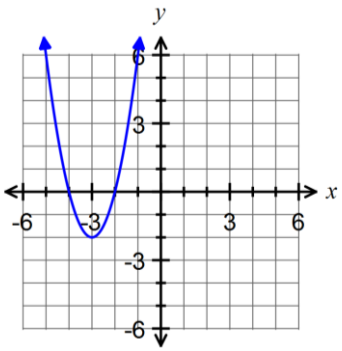
4. $y = -\frac{1}{2}(x-2)(x+4)$

5. $f(x) = 3(x-2)(x-4)$

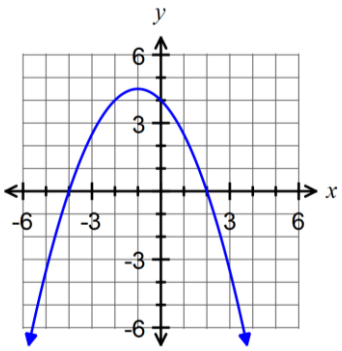
A.



B.

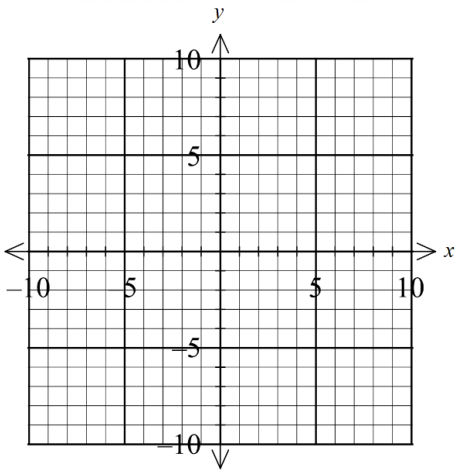


C.



Find the zeros for each of the following quadratic functions and use them to graph a parabola. State the x-intercepts (as ordered pairs), the y-intercept, the coordinates of the vertex, the equation of the axis of symmetry, the direction of opening, the domain and range for each parabola. Include <u>at least 5 points</u>

6. $f(x) = (x-3)(x-7)$



x-intercepts:_____

y-intercepts:_____

vertex:_____

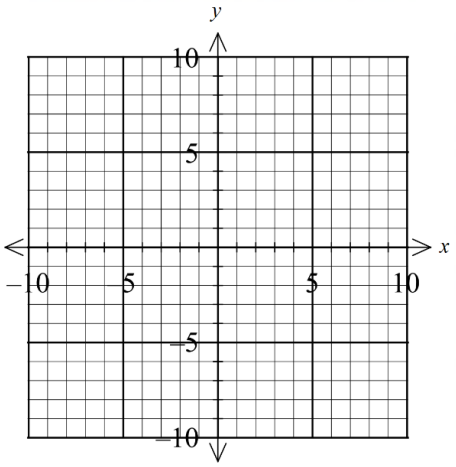
axis of symmetry:_____

direction of opening:_____

domain:_____

range:_____

7. $f(x) = -(x+5)(x-1)$



x-intercepts:_____

y-intercepts:_____

vertex:_____

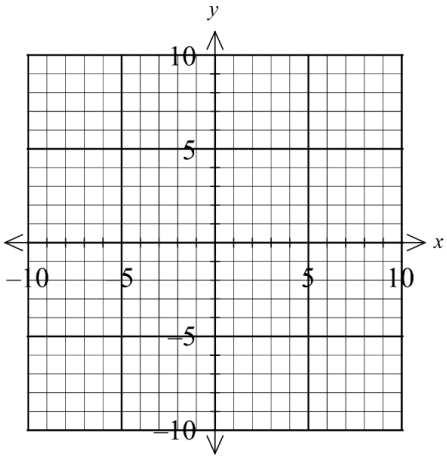
axis of symmetry:_____

direction of opening:_____

domain:_____

range:_____

8. $f(x) = 3(x+1)(x-2)$



x-intercepts:_____

y-intercepts:_____

vertex:_____

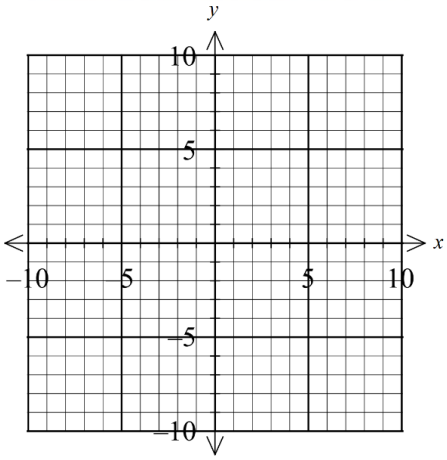
axis of symmetry:_____

direction of opening:_____

domain:_____

range:_____

9. $f(x) = \frac{1}{2}(x+2)(x-5)$



x-intercepts:_____

y-intercepts:_____

vertex:_____

axis of symmetry:_____

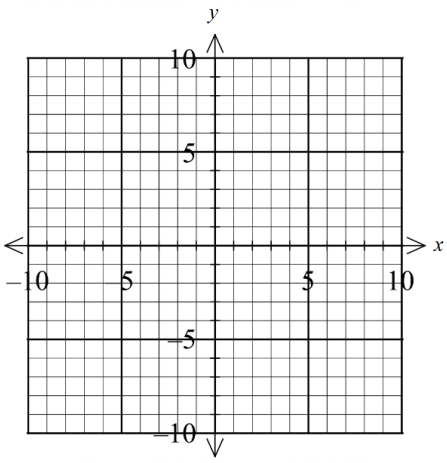
direction of opening:_____

domain:_____

range:_____

Find the zeros for each of the following quadratic equations <u>by factoring</u> and then use them to graph a parabola. State the x-intercepts (as ordered pairs), the y-intercept, the coordinates of the vertex, the equation of the axis of symmetry, the directions of opening and the domain and range for each parabola. Each graph must contain <u>AT LEAST 5 specific points</u>.

10. $f(x) = x^2 - 9x + 14$



x-intercepts:_____

y-intercepts:_____

vertex:_____

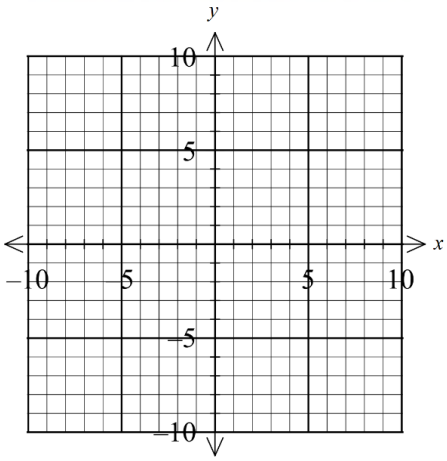
axis of symmetry:_____

direction of opening:_____

domain:_____

range:_____

11. $f(x) = -x^2 + 4x - 4$



x-intercepts:_____

y-intercepts:_____

vertex:_____

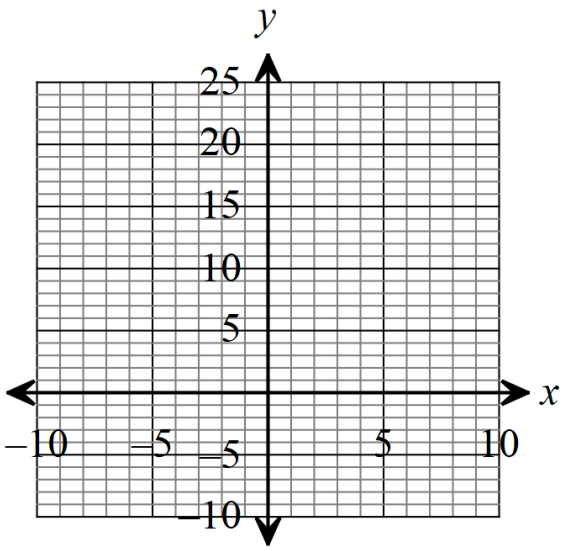
axis of symmetry:_____

direction of opening:_____

domain:_____

range:_____

12. $y = -2(x + 5)(x - 2)$



x-intercepts:_____

y-intercepts:_____

vertex:_____

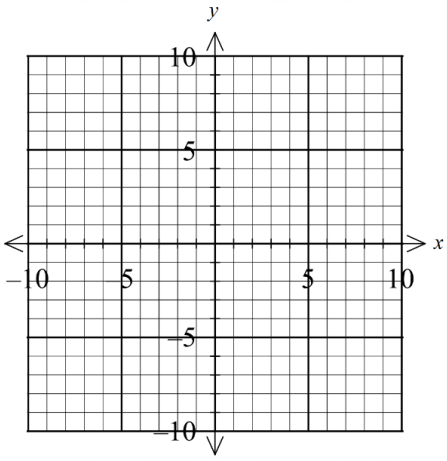
axis of symmetry:_____

direction of opening:_____

domain:_____

range:_____

13. $f(x) = x^2 - 9$



x-intercepts:_____

y-intercepts:_____

vertex:_____

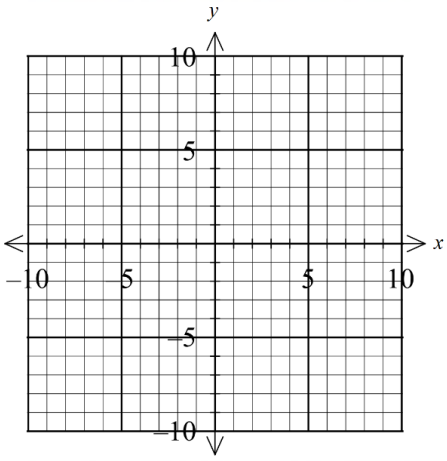
axis of symmetry:_____

direction of opening:_____

domain:_____

range:_____

14. $f(x) = -x^2 - 9$



x-intercepts:_____

y-intercepts:_____

vertex:_____

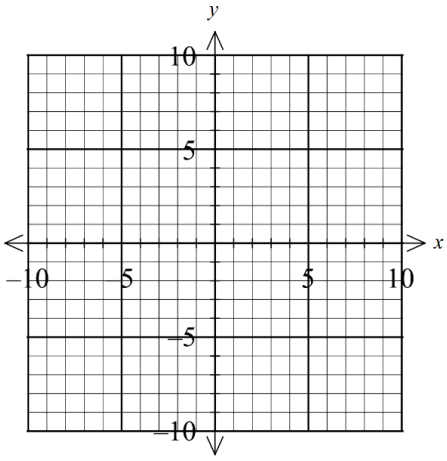
axis of symmetry:_____

direction of opening:_____

domain:_____

range:_____

15. $f(x) = 4x^2 - 12x + 5$



x-intercepts:_____

y-intercepts:_____

vertex:_____

axis of symmetry:_____

direction of opening:_____

domain:_____

range:_____

16. A model rocket is fired straight upward from the ground with an initial speed of 192 feet per second. It's height, *h*, in feet, after *t* seconds is given by the equation $h(t) = -16t^2 + 192t.$ How long will it take for the rocket to return to the ground?

17. A rock is thrown upward off the top of an 80-ft. high cliff. It's height in feet after *t* seconds is given by the formula $h(t) = -16t^2 + 64t + 80.$ How many seconds does it take for the rock to hit the ground?

Solve.

18. $\frac{x}{5} = \frac{8}{3}$

19. $\frac{x}{5} = \frac{9}{x}$

20. $\frac{x-1}{x+2} = 7$

Solve the following equations by completing the square

21. $x^2 - 12x + 23 = 0$

22. $x^2 - 8x - 6 = -2x$