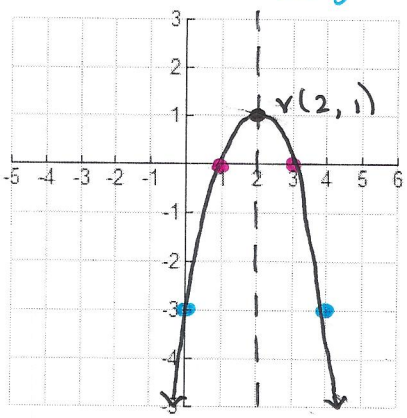
Geometry CC
16.1-16.2 Quiz Review

Name: KEY
Date: _____ Period: _____

Find the zeros of each function by using a graph and table.
x-int.

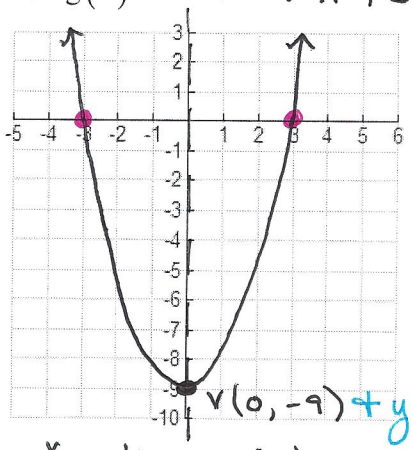
1. $f(x) = -x^2 + 4x$ (−3) y-int.



$x = \frac{-b}{2a} = \frac{-(4)}{2(-1)} = 2 \rightarrow v(2, 1)$

From table: x-int (1, 0)
(3, 0)

2. $g(x) = x^2 - 9 \rightarrow x^2 + 0x$ (−9) y-int.



$x = \frac{-b}{2a} = \frac{-(0)}{2(1)} = 0 \rightarrow v(0, -9)$

From table: x-int (−3, 0)
(3, 0)

Find the zeros of each function by factoring:

3. $f(x) = x^2 - 7x$

$0 = x^2 - 7x$
$0 = x(x-7)$
$x = 0$ $\quad x - 7 = 0$
$x = 7$

4. $f(x) = x^2 - 9x + 20$

$0 = x^2 - 9x + 20$
$0 = (x-4)(x-5)$
$x - 4 = 0$ $\quad x - 5 = 0$
$x = 4$ $\quad x = 5$

5. $f(x) = 3x^2 + 13x + 4$

$0 = 3x^2 + 13x + 4$
12
$0 = 3x^2 + x + 12x + 4$
$0 = x(3x+1) + 4(3x+1)$
$0 = (3x+1)(x+4)$
$3x + 1 = 0$ $\quad x + 4 = 0$
$x = -1/3$ $\quad x = -4$

6. $f(x) = 9x^2 - 30x + 25$

$0 = 9x^2 - 30x + 25$
225
$0 = 9x^2 - 15x - 15x + 25$
$0 = 3x(3x-5) - 5(3x-5)$
$0 = (3x-5)^2$
$3x - 5 = 0 \rightarrow x = 5/3$

Find the roots of each equation using factoring:

7. $x^2 - 10x + 25 = 0$

$(x-5)(x-5) = 0$
$x - 5 = 0$
$x = 5$

8. $7x = 15 - 2x^2$

$2x^2 + 7x - 15 = 0$
−30
$2x^2 + 10x - 3x - 15 = 0$
$2x(x+5) - 3(x+5) = 0$
$(x+5)(2x-3) = 0$
$x + 5 = 0$ $\quad 2x - 3 = 0$
$x = -5$ $\quad x = 3/2$

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9. **Write a quadratic function in standard form with zeros 6 and -1.**

$x=6 \quad x=-1$

$(x-6)(x+1)$

$x^2+x-6x-6 \longrightarrow \boxed{x^2-5x-6}$

10. **Complete the square for the expression** $x^2 - 15x + \underline{225/4}$. **Write the resulting expression as a binomial squared (factor).**

$(15/2)^2 \quad = (x-15/2)^2$

Solve the equation by completing the square:

11. $x^2 - 16x + 64 = 20$

$x^2-16x+\underline{64} = -44+\underline{64}$

$(x-8)^2 = 20$

$x-8 = \pm 2\sqrt{5}$

$\boxed{x = 8 \pm 2\sqrt{5}}$

12. $x^2 - 27 = 4x$

$x^2-4x+\underline{4} = 27+\underline{4}$

$(x-2)^2 = 31$

$x-2 = \pm\sqrt{31}$

$\boxed{x = 2 \pm \sqrt{31}}$

13. $3x^2 + 6x - 1 = 0$

$3(x^2+2x+\underline{1}) = 1+3(\underline{1})$

$3(x+1)^2 = 4$

$(x+1)^2 = 4/3$

$x+1 = \pm \frac{2\sqrt{3}}{3}$

$\boxed{x = -1 \pm \frac{2\sqrt{3}}{3}}$

Write each function in vertex form and identify its vertex: $y=a(x-h)^2+k$

14. $f(x) = x^2 + 6x - 7$

$f(x)+7+\underline{9} = x^2+6x+\underline{9}$

$f(x)+16 = (x+3)^2$

$\boxed{f(x) = (x+3)^2 - 16}$ (opp, keep)

$V(-3,-16)$

15. $f(x) = 2x^2 - 12x - 27$

$f(x)+27+2(\underline{9}) = 2(x^2-6x+\underline{9})$

$f(x)+45 = 2(x-3)^2$

$\boxed{f(x) = 2(x-3)^2 - 45}$ (opp, keep)

$V(3,-45)$