Name: Key Period: _____ Date: _____

Section 5.3 Solving Quadratic Equations by Factoring and with the Calculator DAY ONE

Find the zeros of each function by using your graphing calculator.

1. $f(x) = -x^2 + 4x - 3$

zeros: 1, 3

2. $g(x) = x^2 + x - 6$

zeros: −3, 2

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

zeros: 3, −3

Find the zeros of each function by **FACTORING**.

4. $f(x) = x^2 + 11x + 24$

$0 = x^2 + 11x + 24$
$0 = (x+3)(x+8)$
$x+3=0$ OR $x+8=0$
$x=-3$ $x=-8$

solution(s): −3, −8

5. $g(x) = 2x^2 + x - 10$

$0 = 2x^2 + 1x - 10$
$0 = (2x+5)(x-2)$
$2x+5=0$ OR $x-2=0$
$2x=-5$ $x=2$
$x=-\frac{5}{2}$

solution(s): $-\frac{5}{2}$, 2

6. $h(x) = -x^2 + 9x$

$0 = -1x^2 + 9x$
$0 = x^2 - 9x$
$0 = x(x-9)$
$x=0$ OR $x-9=0$
$x=9$

solution(s): 0, 9

7. $f(x) = x^2 - 15x + 54$

$0 = x^2 - 15x + 54$
$0 = (x-6)(x-9)$
$x-6=0$ OR $x-9=0$
$x=6$ $x=9$

solution(s): 6, 9

8. $g(x) = x^2 + 7x - 8$

$0 = x^2 + 7x - 8$
$0 = (x+8)(x-1)$
$x+8=0$ OR $x-1=0$
$x=-8$ $x=1$

solution(s): −8, 1

9. $h(x) = 2x^2 - 12x + 18$

$0 = 2x^2 - 12x + 18$
$0 = x^2 - 6x + 9$
$0 = (x-3)(x-3)$
$x-3=0$
$x=3$

solution(s): 3

10. A bald eagle snatches a fish from a lake and flies to an altitude of 256 ft. The fish manages to squirm free and falls back down into the lake. Its height h, in feet can be modeled by $h(t) = 256 - 16t^2$, where t is the time in seconds. How many seconds will the fish fall before hitting the water?

I want t when $h(t)=0$

$0 = 256 - 16t^2$
-16
$0 = t^2 - 16$

$0 = (t-4)(t+4)$
$t-4=0$ OR $t+4=0$
$t=4$ OR $t=-4$ neg. time... nope!

4 seconds

11. $x^2 + 8x = -16$

$x^2 + 8x + 16 = 0$
$(x+4)(x+4) = 0$
$x+4=0$

solution(s): −4

12. $36x^2 = 9$

$36x^2 - 9 = 0$
9
$4x^2 - 1 = 0$
$(2x-1)(2x+1) = 0$
$2x-1=0$ $2x+1=0$

solution(s): $\pm\frac{1}{2}$

13. $x^2 + 25 = 10x$

$x^2 - 10x + 25 = 0$
$(x-5)(x-5) = 0$
$x-5=0$

solution(s): 5

Write a quadratic function in standard form for each given set of zeros.

14. 5 and −1

$y = (x-5)(x++1)$ FOIL!

$y = x^2 - 4x - 5$

15. 6 and 2

$y = (x-6)(x-2)$ FOIL!

$y = x^2 - 8x + 12$

16. −3 and 3

$y = (x^2+3)(x^2+3)$

$y = x^2 + 6x + 9$