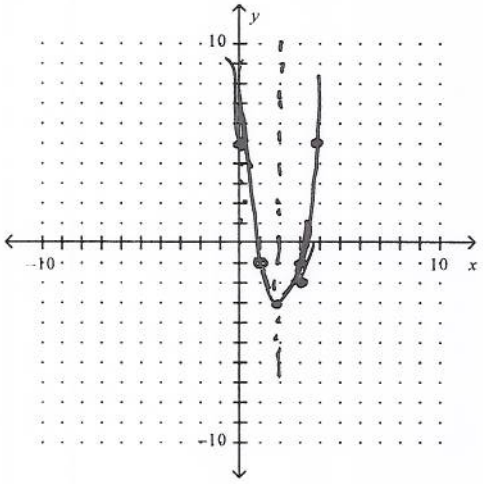
Chapter 4 test review without calculator **Name** Key **Date** _____ **Period** ___

1. Graph the quadratic function. Label the vertex, axis of symmetry, and the two points that you mirror.

$y = 2x^2 - 8x + 5$

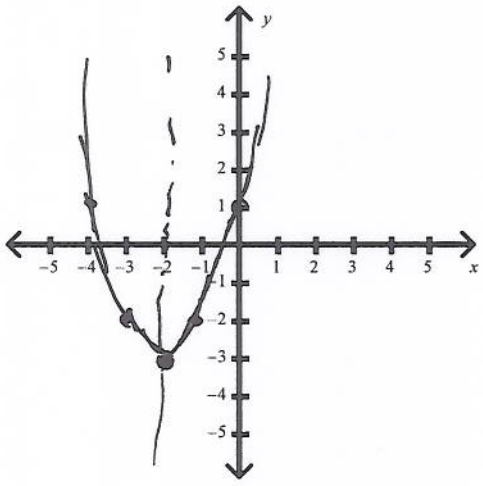


Line of Symmetry x = 2

Vertex (2, -3)

x	y
0	5
1	-1

2. Graph the parabola: $y = (x+2)^2 - 3$ Label vertex, line of symmetry, and the two points that you mirror.



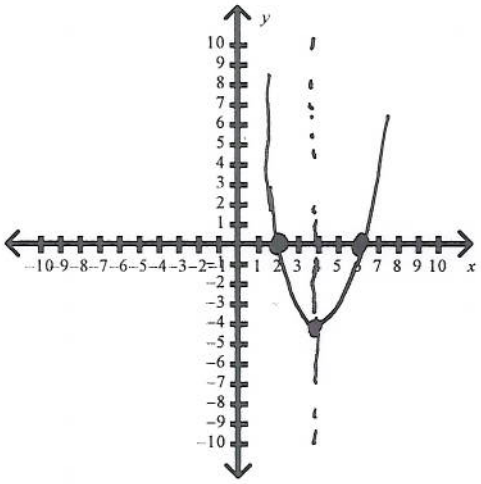
Line of Symmetry x = -2

Vertex (-2, -3)

x	y
-1	-2
0	1

3. Graph the function. Label the vertex, axis of symmetry, and x-intercepts.

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



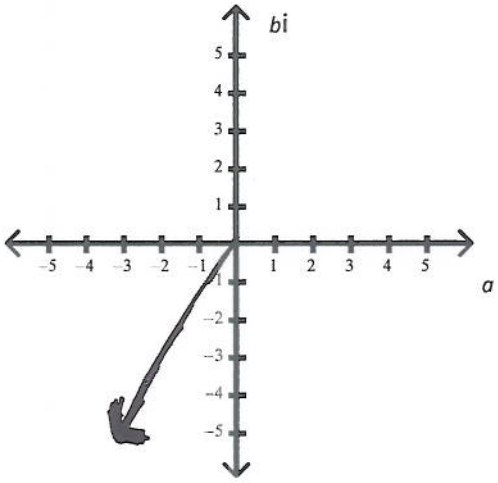
Line of Symmetry $x = 4$

Vertex $(4, -4)$

x-intercepts $(2, 0)$ $(6, 0)$

Plot the number in a complex plane.

4. $-3 - 5i$



Chapter 4 test review - with calculator **NAME** _____

1. Does the parabola open *up* or *down*? $y = -7 - 5x + 3x^2$

1. up

Find the maximum value or minimum value for the function.

2. $f(x) = 3x^2 + 6x + 2$

$x = \frac{-6}{2(3)} = -1$

2. min. -1

min $f(-1) = 3(-1)^2 + 6(-1) + 2 =$
$3 - 6 + 2 = -1$

Write in standard form

3. $y = 2(x-3)(x-2)$

$2(x^2 - 2x - 3x + 6)$
$2(x^2 - 5x + 6)$

3. $2x^2 - 10x + 12$

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

$-(x^2 - 6x + 9) + 4$
$-x^2 + 6x - 9 + 4$

4. $-x^2 + 6x - 5$

Factor the expressions #5 - 8.

5. $x^2 + 14x + 49$

5. $(x+7)^2$

6. $x^2 - x - 12$

6. $(x-4)(x+3)$

7. $x^2 - 7x + 10$

7. $(x-5)(x-2)$

8. $x^2 + 7x - 18$

8. $(x+9)(x-2)$

9. **Find the solutions of the equation.**

$x^2 - 4x - 45 = 0$

$(x-9)(x+5) = 0$

$x-9=0 \quad x+5=0$

9. $x = 9$ or $x = -5$

Factor the expressions #10 and 11.

10. $4x^2 - 36$ $\quad 4(x^2-9)$

10. $4(x-3)(x+3)$

11. $40x^2 - 73x + 30$

1200

$2 \cdot 2 \cdot 3 \cdot 2 \cdot 2 \cdot 5 \cdot 5$

$2 \cdot 2 \cdot 2 \cdot 5 \quad 3 \cdot 2 \cdot 5$

$\frac{5}{8} = \frac{25}{40} \quad \frac{48}{40} = \frac{6}{5}$

11. $(5x-6)(8x-5)$

Solve the equation.

12. $4x^2 - 40x + 64 = 0$

$4(x^2 - 10x + 16) = 0$

$x^2 - 10x + 16 = 0$

$(x-8)(x-2) = 0$

12. $x = 8$ or $x = 2$

Factor completely.

13. $45u^5 + 48u^4 - 45u^3$

$3u^3(15u^2 + 16u - 15)$

$\frac{5}{3} = \frac{+25}{15}, \frac{-9}{15} = \frac{-3}{5}$

$3u^3(3u+5)(5u-3)$

14. **Solve the equation.** $4x^2 + 20 = 0$

$\frac{4x^2}{4} = \frac{-20}{4}$

$x^2 = -5$

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

14. $x = \pm i\sqrt{5}$

15 – 18 Write the expressions as complex numbers in standard form.

15. $(1+i)-(-8-6i)$ $= 1+i+8+6i$ 15. $9+7i$

16. $(-3+7i)(1-2i)$ $= -3+6i+7i-14i^2$ (-1) 16. $11+13i$

17. $\frac{3-9i}{2+3i}\ \frac{(2-3i)}{(2-3i)} = \frac{6-9i-18i+27i^2}{4-3i+3i-9i^2}$ (-1) (-1) 17. $\frac{-21}{13} - \frac{27}{13}i$

$\frac{-21-27i}{13}$

18. Use the quadratic formula to solve: $x^2 - 3x - 1 = 0$ 18. $\frac{3 \pm \sqrt{13}}{2}$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $x = \frac{3 \pm \sqrt{(-3)^2-4(1)(-1)}}{2(1)} = \frac{3 \pm \sqrt{13}}{2}$

19. State the discriminant of the quadratic. $3x^2 - 4x + 4 = 0$ 19. -32

$b^2-4ac = (-4)^2-4(3)(4)$
$= 16-48$

20. Use the discriminant to determine the number and type of solutions of the equation.

$5x^2 - 3x + 1 = 0$

$b^2-4ac = (-3)^2-4(5)(1)$
$9-20$
-11

20. 2 imaginary solutions