

Unit 1 Review

Quadratics

Name: Key

Date: _____ Period: _____

	x 2	
x	x ²	2x
12	12x	24

I. Factoring Trinomials (5 points each)

1. $x^2 + 14x + 24$

$(x+2)(x+12)$

24
^
12 4
2 12
3 8

2. $10x^2 + 33x - 7$

$(5x-1)(2x+7)$

	5x - 1	
10x ²	2x	10x ² - 2x
-70x	7	35x - 7

1 70
2 35

Solve the following Quadratic equations. (5 points each)

3. $x^2 + 25 = 0$

$\sqrt{x^2} = \sqrt{-25}$

$x = \pm 5$

4. $5x^2 + 20x = 0$

$5x(x+4) = 0$

$5x = 0$ $x + 4 = 0$
 $\frac{5x}{5} = 0$ $\frac{x+4}{1} = 0$
 $x = 0$ $x = -4$

5. $x^2 + 8x - 20 = 0$

$(x-2)(x+10) = 0$

$x-2=0$ $x+10=0$
 $\frac{x-2}{+2} = 0$ $\frac{x+10}{-10} = 0$
 $x = 2$ $x = -10$

20
^
1 20
5 4
2 10

	x 10	
x	x ²	10x
-2	-2x	-20

6. $6x^2 + 7x - 5 = 0$

$(2x-1)(3x+5) = 0$
 $2x-1=0$ $3x+5=0$
 $\frac{2x-1}{+1} = 0$ $\frac{3x+5}{-3} = 0$
 $x = \frac{1}{2}$ $x = -\frac{5}{3}$

$x = 0$

7. $10x^2 + 3x = 0$

8. $2x^2 + 98 = 0$

$\sqrt{x^2} = \sqrt{49}$
 $x = \pm 7$

Discriminant and Quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ (5 points each)

9. $x^2 - 8x + 5 = 0$

Discriminant: 44

Type of Roots: real

Roots: 7.317, .684

$\frac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(5)}}{2(1)}$

$\frac{8 \pm \sqrt{64 - 20}}{2} = \frac{8 \pm \sqrt{44}}{2} = \frac{8 \pm 6.633}{2}$
 $\Rightarrow \frac{8 + 6.633}{2} = 7.317$ or $\frac{8 - 6.633}{2} = .684$

10. $6x^2 - 8x + 3 = 0$

Discriminant: -8

Type of Roots: Complex

Roots: $\frac{8 \pm 2.828i}{12}$

$\frac{-(-8) \pm \sqrt{(-8)^2 - 4(6)(3)}}{2(6)} = \frac{8 \pm \sqrt{64 - 72}}{12} = \frac{8 \pm \sqrt{-8}}{12} = \frac{8 \pm 2.828i}{12}$

11. $3x^2 - 5x + 1 = 0$ Discriminant: 13 Type of Roots: 2 real Roots: 1.434, .232

$$\frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(1)}}{2(3)} = \frac{5 \pm \sqrt{25 - 12}}{6} = \frac{5 \pm \sqrt{13}}{6} = \frac{5 \pm 3.606}{6} = 1.434 \text{ or } .232$$

12. Solve: $(2x - 5)^2 = 81$

Bonus on test

$$\sqrt{(2x-5)^2} = \sqrt{81}$$

$$2x - 5 = 9$$

$$\begin{array}{r} 2x - 5 = 9 \\ +5 \quad +5 \\ \hline \end{array}$$

$$\begin{array}{r} 2x = 14 \\ \hline 2 \quad 2 \end{array}$$

$$x = 7$$