Name: Key Class Period: _____

Math 2: Unit 2 Review Sheet

Complete the number system chart for each number.

Number	Real	Imaginary	Natural	Whole	Integer	Rational	Irrational
1. 0	X			X	X	X	
2. $\sqrt{-3}$		X					
3. $\sqrt{5}$	X						X
4. $\frac{2}{3}$	X					X	
5. 29	X		X	X	X	X	
6. π	X						X
7. -5	X				X	X	
8. $\sqrt{36} = 6$	X		X	X	X	X	

Simplify the following radicals:

9. $\sqrt{72}$

$72 = 8 \cdot 9$, $8 = 4 \cdot 2$, $4 = 2 \cdot 2$, $9 = 3 \cdot 3$

$6\sqrt{2}$

10. $\sqrt{-44}$

$-44 = 4 \cdot 11$, $4 = 2 \cdot 2$

$2\sqrt{11}\,i$

11. $\sqrt{900x^3y}$

$900 = 9 \cdot 100$, $9 = 3 \cdot 3$, $100 = 10 \cdot 10$, $10 = 5 \cdot 2$

$30x\sqrt{xy}$

What is the quadratic formula? $x = \dfrac{-b \pm \sqrt{b^2-4ac}}{2a}$

Solve the following quadratic equations by factoring, the quadratic formula, or completing the square.

12. $2x^2 + 8x + 3 = 0$

$$\frac{-8 \pm \sqrt{8^2-4(2)(3)}}{2(2)}$$

$$\frac{-8 \pm \sqrt{64-24}}{4}$$

$$\frac{-8 \pm \sqrt{40}}{4}$$

$40 = 4 \cdot 10$, $4 = 2 \cdot 2$, $10 = 5 \cdot 2$

$$\frac{-8 \pm 2\sqrt{10}}{4}$$

$$x = \frac{-4 \pm \sqrt{10}}{2}$$

13. $2x^2 + 12x + 3 = 0$

$$\frac{-12 \pm \sqrt{12^2-4(2)(3)}}{2(2)}$$

$$\frac{-12 \pm \sqrt{144-24}}{4}$$

$$\frac{-12 \pm \sqrt{120}}{4}$$

$120 = 12 \cdot 10$, $12 = 3 \cdot 4$, $4 = 2 \cdot 2$, $10 = 5 \cdot 2$

$$\frac{-12 \pm 2\sqrt{30}}{4}$$

$$x = \frac{-6 \pm \sqrt{30}}{2}$$

14. $x^2 - 10x - 24 = 0$

$(x^2-10x+25) = 24+25$

$\sqrt{(x-5)^2} = \sqrt{49}$

$x-5 = 7$

$x = 12$

15. $5x^2 + 40x + 5 = 0$

$5x^2+40x = -5$

$5(x^2+8x+16) = -5+80$

$\frac{5(x+4)^2}{5} = \frac{75}{5}$

$\sqrt{(x+4)^2} = \sqrt{15}$

$x+4 = \sqrt{15}$

$x = \sqrt{15}-4$

Find the discriminant for each quadratic equation and classify the roots.

16. $y = 3x^2 + 2x + 3$

$\sqrt{2^2-4(3)(3)}$

$\sqrt{4-36}$

Discriminant: $\sqrt{-32}$

Solutions: 2 imaginary

17. $y = 4x^2 + 4x + 1$

$\sqrt{4^2-4(4)(1)}$

$\sqrt{16-16}$

Discriminant: $\sqrt{0}$

Solutions: 1 real

18. $y = 2x^2 + 5x - 1$

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

$\sqrt{25+8}$

Discriminant: $\sqrt{33}$

Solutions: 2 real

Complete the perfect square trinomial.

19. $x^2 - 6x +$ 9

20. $x^2 + 9x +$ $\frac{81}{4}$

21. $x^2 - 2x +$ 1

Solve the following:

22. $3(x-2)^2 = 12$

$\frac{3(x-2)^2}{3} = \frac{12}{3}$

$\sqrt{(x-2)^2} = \sqrt{4}$

$x-2 = 2$

$x = 4$

23. $4(x+1)^2 = 20$

$\frac{4(x+1)^2}{4} = \frac{20}{4}$

$\sqrt{(x+1)^2} = \sqrt{5}$

$x+1 = \sqrt{5}$

$x = \sqrt{5}-1$

25. $10(x+5)^2 = 160$

$\frac{10(x+5)^2}{10} = \frac{160}{10}$

$\sqrt{(x+5)^2} = \sqrt{16}$

$x+5 = 4$

$x = -1$