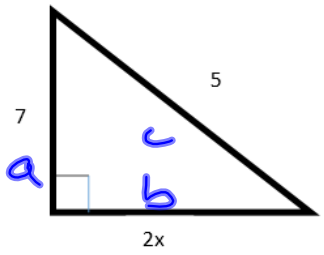
Int. Geo
Factoring with previous knowledge

Name_____



$a^2 + b^2 = c^2$

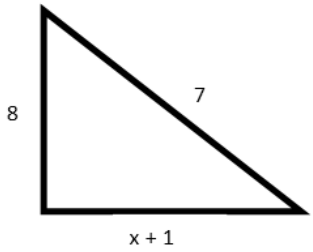
$7^2 + (2x)^2 = 5^2$

$49 + 4x^2 = 25$

$4x^2 = -24$

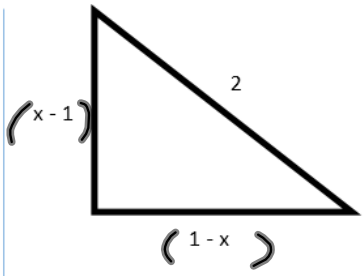
$\sqrt{x^2} = \sqrt{-6}$

$x = \pm\sqrt{-6} = \pm i\sqrt{6}$

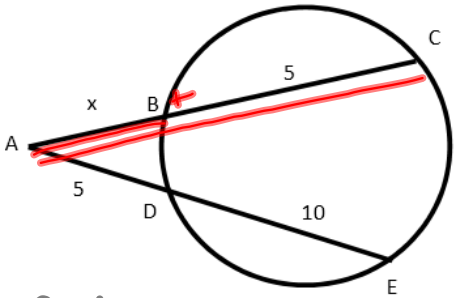


1. Use Pythagorean Theorem
2. Use Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$



$(x-1)^2 + (1-x)^2 = 2$

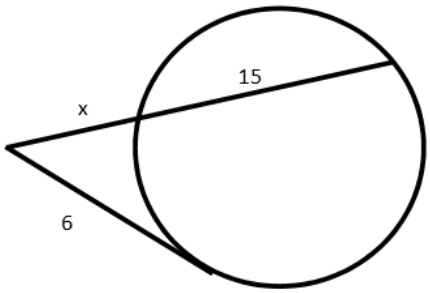


outside(whole) = outside(whole)

$x(x+5) = 5(15)$

$x^2 + 5x = 75$

$x^2 + 5x - 75 = 0$



$x(x+15) = 6^2$

$x^2 + 15x = 36$

$x^2 + 15x - 36 = 0$

Factor out the GCF from each polynomial.

1. $-165x^3 + 198x$	2. $350x^3 - 400x^2 - 300x$	3. $-135x^6 + 108x^5 - 27x^4$

$33x(-5x^2+6)$

$9x^4(-15x^2+12x-3)$

$-27x^4(-5x^2+4x-1)$

Write each polynomial as the product of two binomials.

4. $(x - 12)9 + x(x - 12)$	5. $x(x + 7) + 9(x + 7)$	6. $(x - 10)-9 + 7x(x - 10)$

Factor completely.

7. $x^2 + 14x + 49$	8. $49x^2 - 64$	9. $64x^2 - 9$

Factor completely.

10. $49x^2 - 28xy + 4y^2$	11. $9x^4 - 100$	12. $4x^4 + 28x^2 + 49$

Factor completely.

13. $x^2 - 12x + 20$	14. $x^2 - 19x + 84$	15. $x^2 - x - 12$

$3 \cdot 4 = 12$

$3 - 4 = -1$

$4 - 3 = +1$

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

Solve by factoring.

16. $81x^2 - 100 = 0$	17. $25x^2 - 144 = 0$	18. $64x^2 + 48x + 9 = 0$

$(9x-10)(9x+10)=0$

$9x-10=0 \quad 9x+10=0$

$9x=10 \quad 9x=-10$

$x=10/9 \quad x=-10/9$

14. $x^2 - 19x + 84$

$-7 \cdot -12$

$(x-7)(x-12)$

Find factors

1
2
3
⋮

Factor completely.

10. $49x^2 - 28xy + 4y^2$	11. $9x^4 - 100$	12. $4x^4 + 28x^2 + 49$
$49(4)$ (-28) 196 $14 \cdot 14$ $-14 \cdot -14$	$x^2 \cdot x^2$ $(3x^2 - 10)(3x^2 + 10)$	

$(49x - 14y)(49x - 14y)$
 $7 \quad\quad 7$

$(7x - 2y)(7x - 2y)$

$49x^2 - 14xy - 14xy + 4y^2$

$49x^2 - 28xy + 4y^2$

$(x^2 \quad)(x^2 \quad)$

$4x^4 + 28x^2 + 49$

$4(49)$
 $= 196$
 $14 \cdot 14$

$(4x^2 + 14)(4x^2 + 14)$
 $2 \quad\quad 2$

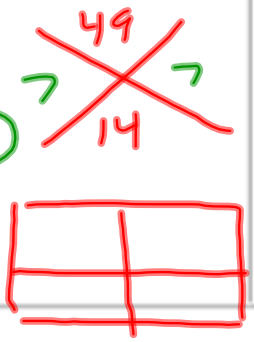
$(2x^2 + 7)(2x^2 + 7)$

Factor completely.

7. $x^2 + 14x + 49$	8. $49x^2 - 64$	9.

$(x+7)(x+7)$

$(x+7)^2$



$(7x-8)(7x+8)$

$49x^2 - 64$

1) 2 terms
2) (−)
3) √

PEMDAS

4. $(x - 12)9 + x(x - 12)$	5. $x(x + 7) + 9(x + 7)$	6.
$9x - 108 + x^2 - 12x$ $x^2 - 3x - 108$	$x^2 + 7x + 9x + 63$ $x^2 + 16x + 63$	

Standard form

$-5x^2 - 10$

$-5(x^2 + 2)$

$-5(x^2 + 2)$

Complete the Square ⇒ vertex form

$y = (x^2 + 6x) - 5$

vertex $(-b/2a, y)$

$y = (x^2 + 6x + 9) - 5 - 9$

$3 \cdot 3$

$b/2a = 3^2$

$y = (x \quad)^2$

$(x \quad)(x \quad)$

$(x+3)(x+3)$

$y = (x+3)^2 - 5 - 9$

$y = (x+3)^2 - 14$

$x^2 + 6x + 9 - 14$

$x^2 + 6x - 5$

Algebra 1 Name_____ ID: 1

Assignment Date_____ Period____

Sketch the graph of each function.

1) $y = x^2 - 8x + 18$

$* \frac{b}{2a}$

$y = (x^2 - 8x + 16) + 18$

$(-4)^2 = \left(\frac{b}{2a}\right)^2$ 16 → $4 \cdot 4$, $-4 \cdot -4$

$\left(\frac{8}{2(1)}\right)^2$

$(x-4)(x-4)$

$y = (x-4)^2 + 18 - 16$

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

$* y = (x - \frac{b}{2a})^2$ _____

$(x-4)^2 + 18 - 16$

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

3) $y = -x^2 - 4x - 7$

4) $y = x^2 + 2x + 2$

Solve each equation by completing the square.

5) $a^2 + 18a - 44 = -4$

6) $n^2 + 16n + 18 = 3$

7) $x^2 - 12x + 4 = -4$

8) $x^2 - 18x + 64 = -8$

9) $n^2 - 16n - 75 = 5$

10) $k^2 + 12k - 89 = -8$

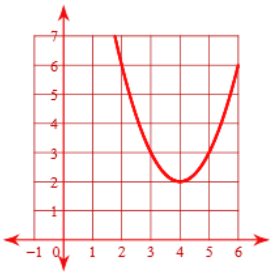
Algebra 1 Name_____ ID: 1

Assignment

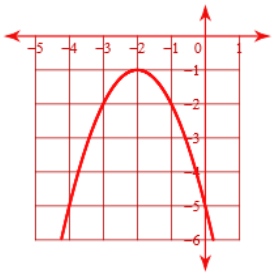
Date_____ Period____

Sketch the graph of each function.

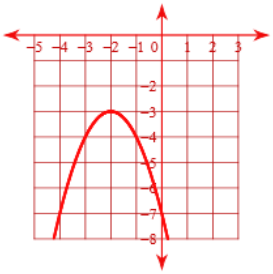
1) $y = x^2 - 8x + 18$



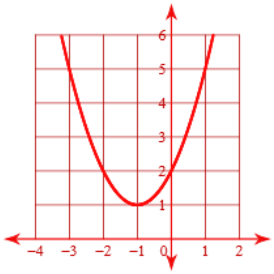
2) $y = -x^2 - 4x - 5$



3) $y = -x^2 - 4x - 7$



4) $y = x^2 + 2x + 2$



Solve each equation by completing the square.

5) $a^2 + 18a - 44 = -4$

$\{2, -20\}$

6) $n^2 + 16n + 18 = 3$

$\{-1, -15\}$

7) $x^2 - 12x + 4 = -4$

{11.292, 0.708}

8) $x^2 - 18x + 64 = -8$

{12, 6}

9) $n^2 - 16n - 75 = 5$

{20, −4}

10) $k^2 + 12k - 89 = -8$

{4.817, −16.817}