

Notes: Factoring Trinomials – Difference of two Squares

QUESTIONS	NOTES:
	<ul style="list-style-type: none"> - Difference means that every polynomial will have a minus sign - Square means each term will be able to be broken down by taking the square root <p><u>STEPS to Factoring:</u></p> <ol style="list-style-type: none"> 1. Take the square root of each term 2. Write as a binomial: <ul style="list-style-type: none"> • Factored form: $(\square + \square)(\square - \square)$ <p><u>Examples:</u></p> <p>$9x^2 - 25$</p> <p> $\sqrt{9} = 3 \cdot 3$ $\sqrt{x^2} = x \cdot x$ $\sqrt{25} = 5 \cdot 5$ </p> <p>FACTORS: <u>$(3x + 5)(3x - 5)$</u></p> <p>GCF = x^2</p> <p> $\frac{100x^4}{x^2} - \frac{9x^2}{x^2}$ $x^2(100x^2 - 9)$ </p> <p> $\sqrt{100} = 10 \cdot 10$ $\sqrt{x^2} = x \cdot x$ $\sqrt{9} = 3 \cdot 3$ </p> <p>FACTORS: <u>$x^2(10x + 3)(10x - 3)$</u></p> <p>$25y^4 - 144x^2$</p> <p> $\sqrt{25} = 5 \cdot 5$ $\sqrt{y^4} = y^2 \cdot y^2$ $\sqrt{144} = 12 \cdot 12$ $\sqrt{x^2} = x \cdot x$ </p> <p>FACTORS: <u>$(5y^2 + 12x)(5y^2 - 12x)$</u></p> <p>$64x^2 - 36$</p> <p> $\sqrt{64} = 8 \cdot 8$ $\sqrt{x^2} = x \cdot x$ $\sqrt{36} = 6 \cdot 6$ </p> <p>FACTORS: <u>$(8x + 6)(8x - 6)$</u></p>

Sometimes you have to factor a GCF first:

$$\frac{108c^2 - 3}{3} \quad \text{GCF} = 3$$

$$3(36c^2 - 1)$$

$$\sqrt{36} = 6 \cdot 6$$

$$\sqrt{c^2} = c \cdot c$$

$$\sqrt{1} = 1 \cdot 1$$

FACTORS: $3(6c + 1)(6c - 1)$

$$\frac{50n^2 - 8}{2} \quad \text{GCF} = 2$$

$$2(25n^2 - 4)$$

$$\sqrt{25} = 5 \cdot 5$$

$$\sqrt{n^2} = n \cdot n$$

$$\sqrt{4} = 2 \cdot 2$$

FACTORS: $2(5n + 2)(5n - 2)$

$$\frac{405z^2 - 245}{5} \quad \text{GCF} = 5$$

$$5(81z^2 - 49)$$

$$\sqrt{81} = 9 \cdot 9$$

$$\sqrt{z^2} = z \cdot z$$

$$\sqrt{49} = 7 \cdot 7$$

FACTORS: $5(9z + 7)(9z - 7)$

7-7 Practice

Form G

Factoring Special Cases – Difference of two Squares

Factor each expression.

1. $m^2 - 49$

$$(m+7)(m-7)$$

2. $c^2 - 100$

$$(c+10)(c-10)$$

3. $p^2 - 16$

$$(p+4)(p-4)$$

4. $4a^2 - 25$

$$(2a+5)(2a-5)$$

5. $64n^2 - 1$

$$(8n+1)(8n-1)$$

6. $25x^2 - 144$

$$(5x+12)(5x-12)$$

7. $50g^2 - 8$ GCF=2

$$2(25g^2 - 4)$$

$$\boxed{2(5g+2)(5g-2)}$$

8. $8d^2 - 8$ GCF=8

$$8(d^2 - 1)$$

$$\boxed{8(d+1)(d-1)}$$

9. $27x^2 - 48$ GCF=3

$$3(9x^2 - 16)$$

$$\boxed{3(3x+4)(3x-4)}$$

10. $24e^2 - 54$ GCF=6

$$6(4e^2 - 9)$$

$$\boxed{6(2e+3)(2e-3)}$$

11. $245k^2 - 20$ GCF=5

$$5(49k^2 - 4)$$

$$\boxed{5(7k+2)(7k-2)}$$

12. $112h^2 - 63$ GCF=7

$$7(16h^2 - 9)$$

$$\boxed{7(4h+3)(4h-3)}$$

13. $48x^2 + 72x + 27$ GCF=3

$$3(16x^2 + 24x + 9)$$

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

$$\boxed{3(4x+3)^2}$$

14. $8b^2 + 80b + 200$ GCF=8

$$8(b^2 + 10b + 25)$$

$$8(b+5)(b+5)$$

$$\boxed{8(b+5)^2}$$

15. $48w^2 + 48w + 12$ GCF=12

$$12(4w^2 + 4w + 1)$$

$$12(2w+1)(2w+1)$$

$$\boxed{12(2w+1)^2}$$