8.7 PART 1 FACTORING DIFFERENCES OF SQUARES

Remember this pattern from earlier in the chapter?

DIFFERENCE OF SQUARES

$a^2 - b^2 = (a + b)(a - b)$

EXAMPLE: $9x^2 - 25$

$(3x)^2 \quad (5)^2$

"a" "b"

$(3x + 5)(3x - 5)$

EXAMPLES: FACTOR EACH BINOMIAL, IF POSSIBLE.

1. $m^2 - 81$

$(m)^2 \quad (9)^2$

$(m + 9)(m - 9)$

2. $25t^2 - 6$

$(5t)^2 \quad (\ )^2$

prime

3. $8y^2 - 1$

$(\ )^2$

prime

4. $9h^2 - 64$

$(3h)^2 \quad (8)^2$

$(3h + 8)(3h - 8)$

EXAMPLES: FACTOR EACH BINOMIAL, IF POSSIBLE.

5. $9x^2 - 100y^4$

$(3x)^2 \quad (10y^2)^2$

$(3x-10y^2)(3x+10y^2)$

6. $\frac{1}{9}g^2 - \frac{4}{25}$

$(\frac{1}{3}g)^2 \quad (\frac{2}{5})^2$

$(\frac{1}{3}g+\frac{2}{5})(\frac{1}{3}g-\frac{2}{5})$

7. $49w^2 - 16$

$(7w)^2 \quad (4)^2$

$(7w-4)(7w+4)$

8. $\frac{49}{16}c^4 - \frac{81}{100}d^2$

$(\frac{7}{4}c^2)^2 \quad (\frac{9}{10}d)^2$

$(\frac{7}{4}c^2-\frac{9}{10}d)(\frac{7}{4}c^2+\frac{9}{10}d)$

ALWAYS LOOK FOR A GCF FIRST!!

9. $50 - 98d^2 = 0$

$2(25 - 49d^2) = 0$

$(5)^2 \quad (7d)^2$

$2(5-7d)(5+7d)=0$

$5-7d=0 \quad -5 \quad -5$

$-7d=-5$

$\frac{-7d}{-7}=\frac{-5}{-7}$

$d=\frac{5}{7}$

$5+7d=0 \quad -5 \quad -5$

$7d=-5$

$\frac{7d}{7}=\frac{-5}{7}$

$d=-\frac{5}{7}$

10. $2c^2 - 32$

$2(c^2 - 16)$

$(c)^2 \quad (4)^2$

$2(c-4)(c+4)$

11. $75x^3 - 12xy^2$

GCF $= 3x$

$3x(25x^2 - 4y^2)$

$(5x)^2 \quad (2y)^2$

$3x(5x - 2y)(5x + 2y)$

12. $\frac{7}{4}n^2 - \frac{28}{9} = 0$

$7\left(\frac{1}{4}n^2 - \frac{4}{9}\right) = 0$

$\left(\frac{1}{2}n\right)^2 \quad \left(\frac{2}{3}\right)^2$

$7\left(\frac{1}{2}n - \frac{2}{3}\right)\left(\frac{1}{2}n + \frac{2}{3}\right) = 0$

$\frac{1}{2}n - \frac{2}{3} = 0$

$+\frac{2}{3} \quad +\frac{2}{3}$

$\frac{2}{1} \cdot \frac{1}{2}n = \frac{2}{3} \cdot \frac{2}{1}$

$n = \frac{4}{3}$

$\frac{1}{2}n + \frac{2}{3} = 0$

$-\frac{2}{3} \quad -\frac{2}{3}$

$\frac{2}{1} \cdot \frac{1}{2}n = -\frac{2}{3} \cdot \frac{2}{1}$

$n = -\frac{4}{3}$

CHALLENGE

13. $32g^4 - 162h^4$

$2(16g^4 - 81h^4)$

$(4g^2)^2 \quad (9h^2)^2$

$2(4g^2 + 9h^2)(4g^2 - 9h^2)$

$(2g)^2 \quad (3h)^2$

$2(4g^2 + 9h^2)(2g + 3h)(2g - 3h)$

14. $(c + d)^2 - e^2$

$(c + d + e)(c + d - e)$