

Algebra II  
Simplifying Rational Expressions

Name \_\_\_\_\_

Simplify (assume no denominator is zero).

$$1. \frac{z}{5z^3 - z} = \frac{z}{z(5z^2 - 1)} = \boxed{\frac{1}{5z^2 - 1}}$$

$$9. \frac{c - 2d}{2d} \text{ Simplified}$$

$$2. \frac{12n^4}{30n^3 - 21n^2r} = \frac{12n^4}{3n^2(10n - 7r)} = \boxed{\frac{4n^2}{10n - 7r}}$$

$$10. \frac{7ab - 14}{21ab + 28} = \frac{7(ab - 2)}{7(3ab + 4)} = \boxed{\frac{ab - 2}{3ab + 4}}$$

$$3. \frac{7ac^2 - 21ac + 35c}{14ac} = \frac{7c(ac - 3a + 5)}{14ac} = \boxed{\frac{(ac - 3a + 5)}{2a}}$$

$$11. \frac{4r + 2rs + 6rs^2}{6r - 4rs} = \frac{2r(2 + s + 3s^2)}{2r(3 - 2s)} = \boxed{\frac{(2 + s + 3s^2)}{(3 - 2s)}}$$

$$4. \frac{3k - 4n}{30kn - 40n^2} = \frac{(3k - 4n)}{10n(3k - 4n)} = \boxed{\frac{1}{10n}}$$

$$12. \frac{3u + 12}{3u^2 - 48} = \frac{3(u + 4)}{3(u^2 - 16)} = \frac{3(u + 4)}{3(u + 4)(u - 4)} = \boxed{\frac{1}{(u - 4)}}$$

$$5. \frac{4a^2b - b^3}{2ab + b^2} = \frac{b(4a^2 - b^2)}{b(2a + b)} = \frac{b(2a - b)(2a + b)}{b(2a + b)} = \boxed{2a - b}$$

$$13. \frac{n^2 - 12nr + 35r^2}{n - 5r} = \frac{(n - 7r)(n - 5r)}{n - 5r} = \boxed{(n - 7r)}$$

~~$\frac{35}{-12}$~~

$$6. \frac{h^2 + 8h + 7}{14 - 5h - h^2} = \frac{h^2 + 8h + 7}{-h^2 - 5h + 14} = \frac{h^2 + 8h + 7}{-1(h^2 + 5h - 14)} = \frac{(h + 7)(h + 1)}{-1(h + 7)(h - 2)} = \boxed{-\frac{(h + 1)}{(h - 2)}}$$

$$14. \frac{x^2 + 6x + 8}{x^2 + 8x + 16} = \frac{(x + 4)(x + 2)}{(x + 4)(x + 4)} = \boxed{\frac{(x + 2)}{(x + 4)}}$$

$$7. \frac{2y^2 - 7y + 6}{2y^2 - 13y + 15} = \frac{(2y - 3)(y - 2)}{(y - 5)(2y - 3)} = \frac{(y - 2)}{(y - 5)}$$

$$15. \frac{3u^2 + 4u + 1}{2u^2 + 5u + 3} = \frac{(3u + 1)(u + 1)}{(2u + 3)(u + 1)} = \boxed{\frac{(3u + 1)}{(2u + 3)}}$$

$$8. \frac{5y^4 + 20y^3 + 20y^2}{2y^2 + 24y + 40} = \frac{5y^2(y^2 + 4y + 4)}{2(y^2 + 12y + 20)}$$

$$16. \frac{w - 2}{4w - 2w^2} = \frac{w - 2}{-2w^2 + 4w} = \frac{w - 2}{-2w(w - 2)} = \boxed{-\frac{1}{2w}}$$

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

$$= \boxed{\frac{5y^2(y + 2)}{2(y + 10)}}$$

~~$\frac{-3}{-7}$~~   
 ~~$\frac{-3}{2}$~~   
 ~~$\frac{-4}{2}$~~   
 ~~$\frac{-2}{-2}$~~   
 ~~$\frac{30}{-13}$~~   
 ~~$\frac{-10}{2}$~~   
 ~~$\frac{-5}{-5}$~~   
 ~~$\frac{-3}{2}$~~

~~$\frac{3}{4}$~~   
 ~~$\frac{3}{3}$~~   
 ~~$\frac{1}{3}$~~   
 ~~$\frac{6}{5}$~~   
 ~~$\frac{2}{5}$~~   
 ~~$\frac{3}{2}$~~