42. $\dfrac{3a+6}{5} \div \dfrac{4a+8}{10a}$

$$\frac{3(a+2)}{5} \cdot \frac{10a}{4(a+2)} = \frac{3 \cdot 2a}{4} = \frac{3a}{2}$$

46. $\dfrac{3w^2-7w-6}{w^2-9} \div \dfrac{9w^2-4}{3w^2+7w-6}$

$$\frac{3w^2-7w-6}{(w+3)(w-3)} \cdot \frac{3w^2+7w-6}{(3w+2)(3w-2)}$$

$3w^2-7w-6$

-18

$9, 2$

$3w^2-9w+2w-6$

$(w-3)(3w+2)$

$3w(w-3)+2(w+3)$

$$\frac{(w-3)(3w+2)}{(w+5)(w-3)} \cdot \frac{(w+5)(3w-2)}{(3w+2)(3w-2)}$$

$$\frac{1}{1} = 1$$

50. $\dfrac{u^2-2u-8}{u^2+3u+2} \div (u^2-3u-4)$

$$\frac{u^2-2u-8}{u^2+3u+2} \cdot \frac{1}{u^2-3u-4}$$

$$\frac{(u-4)(u+2)}{(u+1)(u+2)} \cdot \frac{1}{(u+1)(u-4)} = \frac{1}{(u+1)^2}$$

54. $\dfrac{12h^2+11h-5}{h^4-16} \div \dfrac{h-3h^2}{h^3+4h-2h^2-8} \div \dfrac{4h+5}{h^3}$

$$\frac{12h^2+11h-5}{(h^2)^2-4^2} \cdot \frac{h^3+4h-2h^2-8}{h(1-3h)} \cdot \frac{h^3}{4h+5}$$

$12h^2+11h-5$

$12h^2-4h+15h-5$

$4h(3h-1)+5(3h-1)$

$(3h-1)(4h+5)$

-60

$4,15$

$$\frac{(3h-1)(4h+5)}{(h^2+4)(h^2-4)} \cdot \frac{h(h^2+4)-2(h^2+4)}{h(1-3h)} \cdot \frac{h^3}{4h+5}$$

$$\frac{(3h-1)\cancel{(4h+5)}}{\cancel{(h^2+4)}(h+2)\cancel{(h-2)}} \cdot \frac{\cancel{(h^2+4)}\cancel{(h-2)}}{\cancel{h}(1-3h)} \cdot \frac{h^{\cancel{3}\,2}}{\cancel{4h+5}}$$

$$\frac{(3h-1)h^2}{(h+2)(-1)(-1+3h)} = \frac{\cancel{(3h-1)}h^2}{(-1)\cancel{(3h-1)}(h+2)}$$

$$= \frac{-h^2}{h+2}$$

56. $\dfrac{t^2-2t}{2t}\cdot\dfrac{2}{t}\cdot\dfrac{2t}{t^2-4t+4}\div\dfrac{t+2}{t-2}$

7.3 Adding and Subtracting Rational Expressions with the Same Denominator

6. $\dfrac{2x}{9}+\dfrac{x}{9}$

12. $\dfrac{16x+y}{x-y}+\dfrac{10x-15y}{x-y}$

15. $\dfrac{m+3}{m^2-1} - \dfrac{4}{m^2-1}$

30. $\dfrac{s^2+2s}{s^2+4s+4} - \dfrac{s^2+s-2}{s^2+4s+4}$

36. $\dfrac{2m^2-6m}{m^2-5m+6} + \dfrac{2m-4}{m^2-5m+6} + \dfrac{4}{m^2-5m+6}$

7.4 Adding and Subtracting Rational Expressions with the Different Denominator

20. $\dfrac{3x-y}{6} - \dfrac{3x-2y}{4}$

26. $\dfrac{5m}{m^2-mn} + \dfrac{3}{m}$

28. $\dfrac{2}{c+4} + \dfrac{3}{c+3}$

32. $\dfrac{a+6}{a^2+8a+15} - \dfrac{a-3}{a+3}$

38. $\dfrac{x}{x-7} - \dfrac{x+3}{x^2-4x-21}$

44. $\dfrac{u}{u-1} + \dfrac{2u}{u^2-2u+1}$

50. $\dfrac{x+1}{x^2-4x+4} + \dfrac{4}{x^2+3x-10}$

56. $\dfrac{m^2}{m^2-m+1} - \dfrac{m+1}{m}$

7.5 Complex Rational Expressions

8. $\dfrac{\frac{2}{3}}{\frac{3}{2}}$

12. $\dfrac{\frac{2}{3}+\frac{1}{4}}{1+\frac{1}{2}}$

16. $\dfrac{\dfrac{5}{2x-1}}{\dfrac{x}{x+1}}$

20. $\dfrac{\dfrac{a}{b}-1}{a^2-b^2}$

24. $\dfrac{x-\dfrac{1}{x}}{1+\dfrac{1}{x}}$

28. $\dfrac{\dfrac{k+2}{k^2-3k}}{\dfrac{k^2-4}{k}}$

34. $\dfrac{\dfrac{1}{f+2}-\dfrac{1}{f-3}}{1+\dfrac{1}{f^2-f-6}}$

36. $\dfrac{1-\dfrac{3}{x}}{1-\dfrac{2}{x}-\dfrac{3}{x^2}}$

38. $\dfrac{\dfrac{v^2 + v - 2}{v^2 + 4v}}{\dfrac{2v^2 - 8}{v^2 + 2v - 8}}$

44. $\dfrac{1 - \dfrac{1}{u^2}}{1 + \dfrac{2}{u} + \dfrac{1}{u^2}}$