

Adding and Subtraction Rational Expressions

Simplify each expression.

$$1) \frac{4x-4}{8x+4} - \frac{x-6}{8x+4} = \frac{4x-4-x+6}{8x+4}$$

$$\boxed{\frac{3x+2}{8x+4}}$$

$$2) \frac{n-5}{6n-12} + \frac{n-3}{6n-12}$$

$$\frac{2n-8}{6n-12} = \frac{2(n-4)}{6(n-2)} = \boxed{\frac{n-4}{3(n-2)}}$$

$$3) \frac{3n}{3n+6} + \frac{4}{n+5}$$

$$\frac{3n^2+15n+12n+24}{(3n+6)(n+5)} = \frac{3n^2+27n+24}{(3n+6)(n+5)}$$

$$\frac{3(n^2+9n+8)}{3(n+2)(n+5)} = \boxed{\frac{n^2+9n+8}{(n+2)(n+5)}}$$

$$4) \frac{5}{a+1} - \frac{3}{a+4}$$

$$\frac{5a+20-3a-3}{(a+1)(a+4)} = \boxed{\frac{2a+17}{(a+1)(a+4)}}$$

$$5) \frac{4}{x+6} + \frac{2x}{x+4}$$

$$\frac{4x+16}{(x+6)(x+4)} + \frac{2x^2+12x}{(x+6)(x+4)}$$

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

$$6) \frac{4}{k+2} + \frac{5}{3k+2}$$

$$\frac{12k+8+5k+10}{(k+2)(3k+2)}$$

$$\boxed{\frac{17k+18}{(k+2)(3k+2)}}$$

$$7) \frac{2}{2k} - \frac{3}{4k^2+10k}$$

$$2k(2k+5)$$

$$\frac{4k+10}{2k(2k+5)} - \frac{3}{2k(2k+5)}$$

$$\boxed{\frac{4k+7}{2k(2k+5)}}$$

$$8) \frac{3}{3n^2+6n} - \frac{4}{3n(n+2)}$$

$$3n(n+2)$$

$$\frac{3-4n-8}{3n(n+2)} = \boxed{\frac{-4n-5}{3n(n+2)}}$$