Challenge Set - Multiplying and Dividing Rational Expressions

$$\frac{x^2+6x-7}{3x^2}\cdot\frac{6x}{x+7}\div\frac{x-1}{4}$$

$$=\frac{(x+7)(x-1)}{3x^2}\cdot\frac{6x}{x+7}\cdot\frac{4}{(x-1)}=\boxed{\frac{8}{x}}$$

$$\frac{x^2-3x+2}{x+2}\cdot\frac{3x}{x-2}\cdot\frac{2x+4}{5x^2-5x}$$

$$=\frac{(x-2)(x-1)}{x+2}\cdot\frac{3x}{x-2}\cdot\frac{2(x+2)}{5x(x-1)}=\boxed{\frac{6}{5}}$$

$$\frac{1}{x^3+10x^2}\div\frac{x^2-9}{x+3}\cdot\frac{x+10}{x^2+7x+12}$$

$$\frac{1}{x^2(x+10)}\cdot\frac{x+3}{(x+3)(x-3)}\cdot\frac{x+10}{(x+4)(x+3)}=\frac{1}{x^2(x+3)(x-3)(x+4)}$$

$$\frac{x^2-100}{4x^2}\cdot\frac{x^3-5x^2-50x}{x^4+10x^3}\div\frac{(x-10)^2}{5x}$$

$$\frac{(x+10)(x-10)}{4x^2}\cdot\frac{x(x-10)(x+5)}{x^3(x+10)}\cdot\frac{5x}{(x-10)(x-10)}=\boxed{\frac{5(x+5)}{4x^3}}$$