

## Divide Rational Expressions pg. 325

$$\frac{x^2-4}{x^2-4x} \div \frac{x^2+x-6}{x^2+x-20}$$

\* Recall

$$\frac{3}{7} \div \frac{1}{2}$$

$$\frac{3}{7} \times \frac{2}{1} = \frac{6}{7}$$

\* multiply  
by reciprocal

$$\frac{x^2-4}{x^2-4x} \cdot \frac{x^2+x-20}{x^2+x-6}$$

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

non-permissible values

$$x = 0, 4, -3, 2, -5$$

\* Note

You have to  
consider both  
numerator &  
denominator of  
the reciprocal.

$$\frac{\cancel{(x-2)}(x+2)}{x\cancel{(x-4)}} \cdot \frac{(x+5)\cancel{(x-4)}}{(x+3)\cancel{(x-2)}}$$

$$\frac{(x+2)(x+5)}{x(x+3)}$$

$$\frac{2m^2 - 7m - 15}{2m^2 - 10m} \div \frac{4m^2 - 9}{6} \cdot (3 - 2m)$$

$$\frac{2m^2 - 7m - 15}{2m^2 - 10m} \cdot \frac{6}{4m^2 - 9} \cdot (3 - 2m)$$

Decomposition

add  $\rightarrow -7$

mult  $\rightarrow -30$

-10 + 3

$$(2m^2 - 10m + 3m - 15)$$

$$2m(m - 5) + 3(m - 5)$$

$$(2m + 3)(m - 5)$$

$$\frac{\cancel{(2m+3)}\cancel{(m-5)}}{2m\cancel{(m-5)}} \cdot \frac{6}{\cancel{(2m+3)}\cancel{(2m-3)}} \cdot \frac{\overset{-1}{\cancel{(3-2m)}}}{1}$$

$$m \neq 0, 5, -\frac{3}{2}, \frac{3}{2}$$

$$\frac{-6}{2m} = \boxed{\frac{-3}{m}}$$

$$\left. \begin{array}{l} 2m+3 \neq 0 \\ 2m \neq -3 \\ m \neq 3/2 \end{array} \right\}$$

Note:  $\frac{(x+4)}{(4+x)} = 1$

But  $\frac{(x-4)}{(4-x)} = -1$

pg. 327

# 8, 14, 15