**PreCalculus Name**

**Multiply and Divide Rational Expressions**

|  |
| --- |
| $$\frac{a}{b}∙\frac{c}{d}=\frac{ac}{bd}$$ |
| $$\frac{\frac{a}{b}}{\frac{c}{d}}=\frac{a}{b}∙\frac{b}{c} if b\ne 0,c\ne 0, d\ne 0$$ |
| **Perform the indicated operation and simplify the result.**  |
| **Example 1:**$$\frac{x^{2}-2x+1}{x^{3}+x}∙\frac{4x^{2}+4}{x^{2}+x-2}$$ | **You Try 1:**$$\frac{3x+6}{5x^{2}}∙\frac{x}{x^{2}-4}$$ |
| **Example 2:** $$\frac{x^{2}-3x-10}{x^{2}+2x-35}∙\frac{x^{2}+4x-21}{x^{2}+9x+14}$$ | **You Try 4:**$$\frac{3x^{2}-x-2}{x^{2}+x-2}∙\frac{x^{2}+3x+2}{3x^{2}+8x+4}$$ |

|  |  |
| --- | --- |
| **Example 3:** $$\frac{\frac{x^{2}-2x+1}{x^{3}+x}}{\frac{x^{2}-x-12}{x^{3}-8}}$$ | **You Try 3:**$$\frac{\frac{x^{2}+7x+12}{x^{2}-7x+12}}{\frac{x^{2}+x-12}{x^{2}-x-12}}$$ |
| **Example 4:** $$\frac{\frac{5+x}{5-x}}{\frac{7x}{x^{2}-25}}$$ | **You Try 4:**$$\frac{\frac{x-1}{6x}}{\frac{x^{2}+4x-5}{18}}$$ |
| **Warm-Up** |
| **Reduce the rational expression to lowest terms**$$\frac{x^{2}+5x-14}{2-x}$$ |

|  |
| --- |
| **Wrap-Up** |
| 1. $\frac{x^{2}-4}{x+1}∙\frac{x^{2}+2x+1}{x-2}$
 | 1. $\frac{\frac{x}{x-5}}{\frac{9x}{x^{2}-25}}$
 |

|  |  |
| --- | --- |
| **Name** | **Date** |

|  |
| --- |
| **Practice** |
| 1. $\frac{3}{2x}∙\frac{x^{2}}{6x+10}$
 | 1. $\frac{4}{x^{2}-16}∙\frac{x^{3}-64}{2x}$
 |
| 1. $\frac{x^{2}+x-6}{x^{2}+4x-5}∙\frac{x^{2}-25}{x^{2}+2x-15}$
 | 1. $\frac{\frac{12x}{5x+20}}{\frac{4x^{2}}{x^{2}-16}}$
 |
| 1. $\frac{\frac{x-2}{4x}}{\frac{x^{2}-4x+4}{12x}}$
 | 1. $\frac{\frac{2x^{2}-x-28}{3x^{2}-x-2}}{\frac{4x^{2}+16x+7}{3x^{2}+11x+6}}$
 |