**Unit 7 Review - Rationals** NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Simplify Rational Expressions**

*Simplify. State any restrictions on the variable.*

1. $\frac{p^{2}-4p-32}{p+4}$ 2. $\frac{x^{2}+3x-28}{x^{2}-49}$ 3. $\frac{2m^{2}+10m-48}{8m+64}$

**Multiply/Divide Rational Expressions**

*Simplify. Remember to keep, change, flip when dividing.*

4. $\frac{z^{2}}{z+1}⋅\frac{z^{2}+3z+2}{z^{2}+3z}$ 5. $\frac{c+1}{c-5}÷\frac{c-2}{c^{2}-7c+10}$

6. $\frac{x^{2}-16}{x^{2}+5x+6}÷\frac{x^{2}+5x+4}{x^{2}-2x-8}$ 7. $\frac{b^{2}}{b+9}⋅\frac{b^{2}+15b+54}{b^{2}-4b}$

**Add/Subtract Rational Expressions**

*Simplify. Remember to get a common denominator first.*

8. $\frac{3}{m+5}+\frac{8}{m^{2}-25}$ 9. $\frac{k^{2}-2k-8}{k^{2}+k-2}-\frac{6}{k-1}$

10. $\frac{w^{2}+2w-24}{w^{2}+w-30}+\frac{8}{w-5}$ 11. $\frac{3}{x+7}-\frac{4}{x-8}$

**Solve Rational Equations**

*Solve. Remember to check for extraneous solutions.*

12. $\frac{-2}{x+4}=\frac{4}{x+3}$ 13. $\frac{v^{2}}{v-4}=\frac{16}{v-4}$ 14. $\frac{a}{a^{2}-36}+\frac{2}{a-6}=\frac{1}{a+6}$

**Graphs of Rational Functions**

*Identify holes, vertical asymptotes, horizontal asymptotes, and domain of the rational functions. Then graph the function.*

15. $f(x)=\frac{3x^{2}+21x}{x^{2}+5x-14}$ 16. $f(x)=\frac{4}{(x+3)(x-1)}$ 17. $f(x)=\frac{x^{2}-9x+20}{4x^{2}-12x-40}$

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Hole: |  |  | Hole: |  |  | Hole: |  |
| VA: |  | VA: |  | VA: |  |
| HA: |  | HA: |  | HA: |  |
| Domain: |  | Domain: |  | Domain: |  |

