

Rational PreTest - Unit 4

Date _____ Period _____

Divide.

1) $(b^5 - 12b^4 + 30b^3 + 34b^2 + 13b - 35) \div (b - 7)$

2) $(a^5 - 16a^4 + 64a^3 - 19a^2 - 33a + 12) \div (a - 6)$

Simplify each and state the excluded values.

3) $\frac{10r + 50}{10r + 25}$

4) $\frac{5k^3 - 10k^2}{k^2 + 6k - 16}$

Simplify each expression.

5) $\frac{3x^2 + 21x}{x + 7} \cdot \frac{1}{9x + 54}$

6) $\frac{x^2 + 4x + 4}{x^2 - 3x - 10} \cdot \frac{x^2 - 2x - 15}{x^2 - 3x + 4}$

7) $\frac{9}{p + 3} \div \frac{7p^2 + 56p}{p + 3}$

8) $\frac{7v^3 - 28v^2}{4v} \div \frac{7v^2}{4v}$

$$9) \frac{5p}{p^2 - 2p - 8} - \frac{4}{p^2 + 5p + 6}$$

$$10) \frac{5x}{x-1} + \frac{6}{x+4}$$

$$11) \frac{4x}{x+5} - \frac{5}{x-3}$$

$$12) \frac{2}{b+4} - \frac{4}{b+2}$$

Solve each equation. Remember to check for extraneous solutions.

$$13) \frac{2p+4}{3p^2+12p} = \frac{1}{3p} + \frac{2}{p^2+4p}$$

$$14) \frac{1}{n+2} = 1 + \frac{2}{n+2}$$

$$15) \frac{4}{n^2+5n} + \frac{1}{4} = \frac{n^2-5n-6}{4n^2+20n}$$

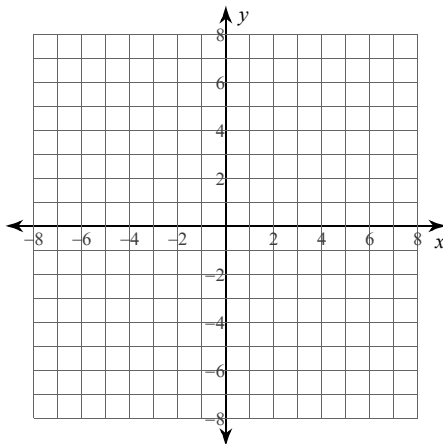
$$16) \frac{4n-8}{n} + \frac{2}{n^2-7n} = \frac{1}{n-7}$$

- 17) It took a woman the same time to drive 150 miles as it takes a train to travel 250 miles. If the train is traveling 20 mi/h faster than the woman is driving, find the rate at which each is traveling.

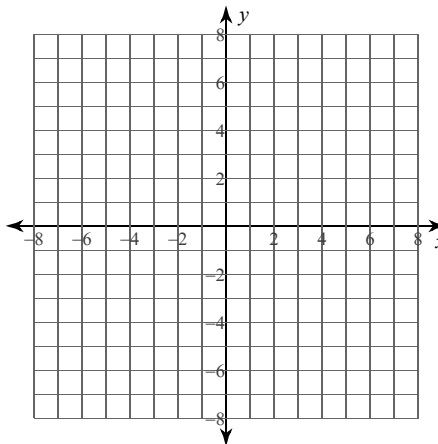
- 18) Wilma can mow the lawn in 3 hours. If Kyle helps her with another mower, the lawn can be mowed in 2 hours. How long would it take Kyle if he worked alone?

Graph each function.

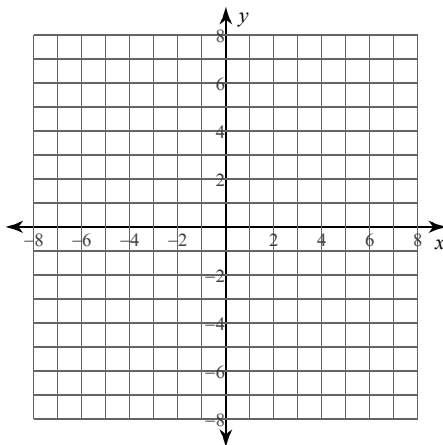
$$19) f(x) = \frac{x + 4}{-2x - 2}$$



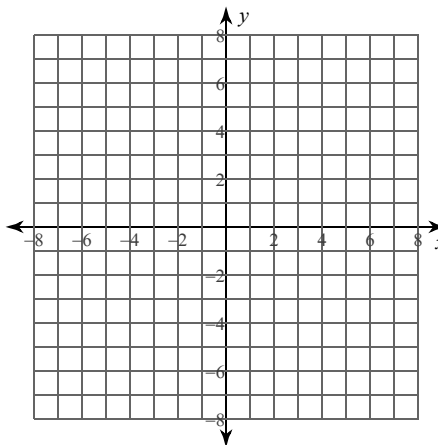
$$20) f(x) = \frac{-3x - 12}{x + 3}$$



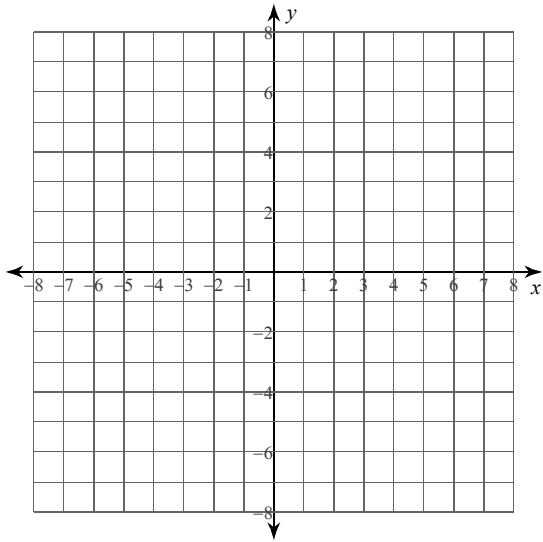
$$21) f(x) = \frac{1}{x^2 - 2x - 3}$$



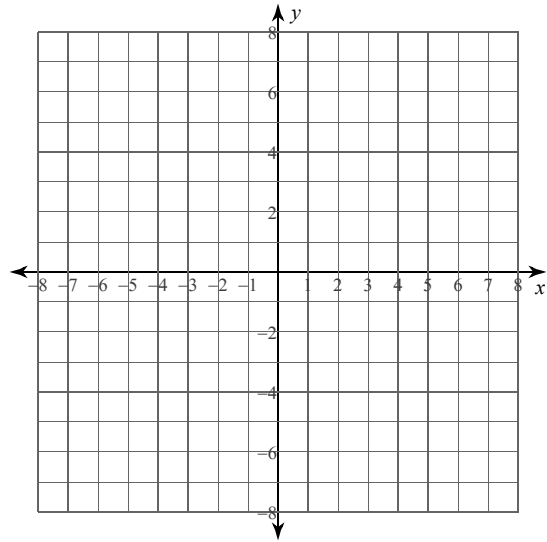
$$22) f(x) = \frac{2x + 8}{x^2 - 9}$$



$$23) \frac{x^2 - 5x + 6}{x - 1}$$



$$24) \frac{x^2 + 7x + 12}{x + 5}$$



Honors. Factor each.

$$25) x^3 - 3x^2 - x + 3 = 0$$

$$26) x^3 - x^2 - 5x - 3 = 0$$