Pre-Calculus 12   Name:_____
Rational Expression Review   Block: _____

1. Add the following fractions.

   a) $\dfrac{1}{2} + \dfrac{2}{3}$ b) $\dfrac{x}{y} + \dfrac{1}{xy}$

The same method can be applied when adding fractions involving trigonometric functions.

$$\dfrac{\sin\theta}{\cos\theta} + \dfrac{1}{\sin\theta}$$

Complex fractions can be simplified in a similar way by multiplying
the numerator and denominator by the common denominator.

2. Simplify.

   a) $\dfrac{\dfrac{2}{5} + 3}{\dfrac{1}{2} + \dfrac{1}{5}}$ b) $\dfrac{\dfrac{\sin\theta}{\cos\theta} + 1}{\dfrac{1}{\cos\theta} + \sin\theta}$

Assignment

Simplify each Expression.

1. a) $\dfrac{5}{6} + \dfrac{1}{3}$

    b) $\dfrac{a}{b} + \dfrac{c}{ab}$

    c) $\dfrac{\sin\theta}{\cos\theta} + \dfrac{\cos\theta}{\sin\theta}$

    d) $\dfrac{1}{\cos^2\theta} + \dfrac{1}{\cos\theta}$

    e) $\dfrac{2}{x} + \dfrac{3}{y}$

    f) $\dfrac{7}{xy^2} - \dfrac{15}{x^2 y}$

    g) $\dfrac{\cos\theta}{\sin\theta} - \dfrac{1}{\sin^2\theta}$

    h) $\dfrac{2}{\sin\theta\cos\theta} - \dfrac{1}{\cos\theta\sin\theta}$

    i) $\dfrac{17a}{bc} + \dfrac{5b}{ac}$

    j) $\dfrac{15n^2}{m} + \dfrac{11n}{m^2}$

    k) $\dfrac{\sin\theta}{\cos^2\theta} - \dfrac{\cos\theta}{\sin\theta}$

    l) $\dfrac{2\sin\theta}{\cos^2\theta} - \dfrac{\sin\theta}{\cos\theta}$

2. a) $\dfrac{\dfrac{2}{3} + 1}{\dfrac{1}{2} + \dfrac{1}{3}}$

    b) $\dfrac{\dfrac{x}{y} + x}{\dfrac{y}{x} + y}$

    c) $\dfrac{\dfrac{\cos\theta}{\sin\theta} + \sin\theta}{\dfrac{1}{\sin\theta} + 1}$

    d) $\dfrac{\cos\theta + \dfrac{1}{\sin\theta}}{\sin\theta}$

    e) $\dfrac{x + \dfrac{2x}{3}}{6}$

    f) $\dfrac{6x - \dfrac{3x}{5}}{3x}$

    g) $\dfrac{5s - \dfrac{3s}{4}}{s - \dfrac{5s}{4}}$

    h) $\dfrac{\dfrac{\cos\theta}{\sin\theta} - 1}{1 - \dfrac{\cos\theta}{\sin\theta}}$

    i) $\dfrac{8a + 5 - \dfrac{3a}{2}}{3a - 7 + \dfrac{5a}{2}}$

    j) $\dfrac{2m + \dfrac{5}{m-3}}{5m - \dfrac{2}{m-3}}$

    k) $\dfrac{2s - 5 - \dfrac{2s^2 - 3s}{s+1}}{3s - 1 - \dfrac{2s+1}{s+1}}$

    l) $\dfrac{\dfrac{\sin\theta}{\cos\theta} + \dfrac{1}{\cos\theta}}{\dfrac{1}{\cos\theta} + \dfrac{\cos\theta}{\sin\theta}}$

Answers:

1. a) $\dfrac{7}{6}$ b) $\dfrac{a^2+c}{ab}$ c) $\dfrac{\sin^2\theta + \cos^2\theta}{\sin\theta\cos\theta}$ d) $\dfrac{1+\cos\theta}{\cos^2\theta}$ e) $\dfrac{3x+2y}{xy}$ f) $\dfrac{7x-15y}{x^2 y^2}$ g) $\dfrac{\sin\theta\cos\theta - 1}{\sin^2\theta}$ h) $\dfrac{1}{\sin\theta\cos\theta}$ i) $\dfrac{17a^2 + 5b^2}{abc}$ j) $\dfrac{n(15mn+11)}{m^2}$

   k) $\dfrac{\sin^2\theta - \cos^3\theta}{\sin\theta\cos^2\theta}$ l) $\dfrac{\sin\theta(2-\cos\theta)}{\cos^2\theta}$

2. a) 2 b) $\dfrac{x^2(1+y)}{y^2(1+x)}$ c) $\dfrac{\cos\theta + \sin^2\theta}{1+\sin\theta}$ d) $\dfrac{\sin\theta\cos\theta + 1}{\sin^2\theta}$ e) $\dfrac{5x}{18}$ f) $\dfrac{9}{5}$ g) -17 h) -1 i) $\dfrac{13a+10}{11a-14}$ j) $\dfrac{2m^2 - 6m + 5}{5m^2 - 15m - 2}$ k) $\dfrac{-5}{3s^2 - 2}$ l) $\dfrac{\sin\theta(\sin\theta + 1)}{\sin\theta + \cos^2\theta}$