

## Complex Fractions

Simplify each expression.

$$1) \frac{\frac{25}{16} - \frac{1}{2} \cdot 16}{25 \cdot 16} = \frac{25-8}{400} = \frac{17}{400}$$

$$2) \frac{\frac{9}{16} + \frac{16}{9} \cdot 144}{3 \cdot 144} = \frac{81 + 256}{432} = \frac{337}{432}$$

$$3) \frac{\frac{5}{m} + \frac{5}{m-5} \cdot m(m-5)}{(m-5) \cdot m(m-5)} = \frac{5(m-5) + 5m}{m(m-5)^2}$$

$$4) \frac{\frac{25}{2x} - \frac{1}{2} \cdot 10x}{\frac{1}{5} \cdot 10x}$$

$$\frac{5(25) - 5x}{2x}$$

$$\frac{5m - 25 + 5m}{m(m-5)^2}$$

$$\frac{5(25-x)}{2x} \quad \text{ev: } \{0\}$$

$$\frac{10m - 25}{m(m-5)^2}$$

$$\frac{5(2m-5)}{m(m-5)^2} \quad \text{ev: } \{0, 5\}$$

$$5) \frac{\frac{6}{x^2} + \frac{x}{25} \cdot 225x^2}{\frac{x^2}{9} - \frac{10}{x} \cdot 225x^2} = \frac{1350 + 9x^3}{25x^4 - 2250x}$$

$$6) \frac{\frac{5}{2} - \frac{u}{8} \cdot 200u}{\frac{2}{25} - \frac{4}{u} \cdot 200u}$$

$$\frac{500u - 25u^2}{16u - 800}$$

$$\frac{9(150 + x^3)}{25x(x^3 - 90)} \quad \text{ev: } \{0, \sqrt[3]{90}\}$$

$$\frac{-25u(u-20)}{16(u-50)} \quad \text{ev: } \{0, 50\}$$

$$7) \frac{\frac{3x}{x-2} - \frac{2}{x}}{\frac{x}{4} - \frac{x-2}{4}} \cdot 4x(x-2)$$

$$\frac{4x(3x) - 8(x-2)}{x^2(x-2) - x(x-2)(x-2)}$$

$$\frac{12x^2 - 8x + 16}{x^3 - 2x^2 - x(x^2 - 4x + 4)}$$

$$\frac{12x^2 - 8x + 16}{x^3 - 2x^2 - x^3 + 4x^2 - 4x}$$

$$\frac{4(3x^2 - 2x + 4)}{2x^2 - 4x} = \frac{4(3x^2 - 2x + 4)}{2x(x-2)} = \frac{2(3x^2 - 2x + 4)}{x(x-2)}$$

$$\text{ev: } \{0, 2\}$$

$$9) \frac{\frac{25}{9} + \frac{4}{25} \cdot 450x}{\frac{5}{x} - \frac{3}{2} \cdot 450x}$$

$$\frac{50x(25) + 18x(4)}{450(5) - 225x(3)}$$

$$\frac{1250x + 72x}{2250 - 675x} = \frac{1322x}{-225(3x-10)}$$

$$\text{ev: } \{0, \frac{10}{3}\}$$

$$8) \frac{\frac{x^2}{3} - \frac{5}{x^2} \cdot 9x^2}{\frac{16}{x^2} - \frac{x^2}{9} \cdot 9x^2}$$

$$\frac{3x^2(x^2) - 5(9)}{9(16) - (x^2)(x^2)}$$

$$\frac{3x^4 - 45}{144 - x^4} = \frac{3(x^4 - 15)}{-1(x^4 - 144)}$$

$$= -\frac{3(x^4 - 15)}{(x^2 - 12)(x^2 + 12)} \text{ ev: } \{0, 12, -12\}$$

$$10) \frac{\frac{a}{25} - \frac{a}{a-1} \cdot 100(a-1)}{\frac{a-1}{4} + \frac{a}{4} \cdot 100(a-1)}$$

$$\frac{4a(a-1) - 100a}{25(a-1)^2 + 25a(a-1)}$$

$$\frac{4a^2 - 4a - 100a}{25(a^2 - 2a + 1) + 25a^2 - 25a}$$

$$\frac{4a(a-26)}{25a^2 - 50a + 25 + 25a^2 - 25a}$$

$$\frac{4a(a-26)}{25(2a^2 - 3a + 1)} = \frac{4a(a-26)}{25(2a-1)(a-1)}$$

$$\text{ev: } \{\frac{1}{2}, 1\}$$

## Complex Fractions

Simplify each expression.

1) 
$$\frac{\frac{25}{16} - \frac{1}{2}}{25}$$

2) 
$$\frac{\frac{9}{16} + \frac{16}{9}}{3}$$

3) 
$$\frac{\frac{5}{m} + \frac{5}{m-5}}{m-5}$$

4) 
$$\frac{\frac{25}{2x} - \frac{1}{2}}{\frac{1}{5}}$$

5) 
$$\frac{\frac{6}{x^2} + \frac{x}{25}}{\frac{x^2}{9} - \frac{10}{x}}$$

6) 
$$\frac{\frac{5}{2} - \frac{u}{8}}{\frac{2}{25} - \frac{4}{u}}$$

$$7) \frac{\frac{3x}{x-2} - \frac{2}{x}}{\frac{x}{4} - \frac{x-2}{4}}$$

$$8) \frac{\frac{x^2}{3} - \frac{5}{x^2}}{\frac{16}{x^2} - \frac{x^2}{9}}$$

$$9) \frac{\frac{25}{9} + \frac{4}{25}}{\frac{5}{x} - \frac{3}{2}}$$

$$10) \frac{\frac{a}{25} - \frac{a}{a-1}}{\frac{a-1}{4} + \frac{a}{4}}$$