

**COMPLEX FRACTIONS**

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**Simplify each expression.**

1) 
$$\frac{\frac{4}{x^2} - \frac{1}{4}}{\frac{1}{4}}$$

2) 
$$\frac{\frac{m^2}{36} - \frac{36}{m^2}}{m}$$

3) 
$$\frac{\frac{x}{6} - \frac{x^2}{9}}{\frac{2}{9}}$$

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

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

6) 
$$\frac{\frac{a+4}{a-1}}{\frac{a-1}{a+4} - \frac{a^2}{a-1}}$$

7) 
$$\frac{\frac{1}{x}}{\frac{5}{x^2} - \frac{9}{25}}$$

8) 
$$\frac{\frac{m-3}{12} - \frac{m-3}{18}}{\frac{m-3}{6}}$$

$$9) \frac{\frac{6}{x-2} - \frac{x-2}{3}}{\frac{x-2}{6}}$$

$$10) \frac{\frac{36}{a}}{\frac{1}{a} + \frac{2}{a}}$$

$$11) \frac{\frac{5}{a} + \frac{a}{6}}{5}$$

$$12) \frac{\frac{x+6}{x} + \frac{25}{x+6}}{25}$$

$$13) \frac{\frac{6}{9} - \frac{a}{4}}{4}$$

$$14) \frac{\frac{u-4}{25}}{\frac{5}{u-4} + \frac{u-4}{25}}$$

$$15) \frac{\frac{1}{8} + \frac{4}{x^2}}{2}$$

$$16) \frac{\frac{x^2}{3}}{\frac{4}{3} - \frac{x}{9}}$$

$$17) \frac{\frac{x}{x-1} - \frac{x+5}{x^2}}{x}$$

$$18) \frac{\frac{1}{2} - \frac{1}{x}}{4}$$

$$19) \frac{\frac{u}{u^2}}{\frac{9}{9}} + \frac{u}{3}$$

$$20) \frac{\frac{5}{4} + \frac{4}{m^2}}{\frac{5}{2m}}$$

$$21) \frac{\frac{6}{m-3} + \frac{m}{m-3}}{\frac{m^2}{36} + \frac{6}{m-3}}$$

$$22) \frac{\frac{u}{5} + \frac{2}{u}}{\frac{3}{u} - \frac{5}{4}}$$

$$23) \frac{\frac{u}{3} - \frac{4}{9}}{\frac{u^2}{16} - \frac{1}{2}}$$

$$24) \frac{\frac{6}{a} + \frac{2a-3}{3}}{\frac{a}{3} - \frac{6}{2a-3}}$$

$$25) \frac{\frac{16}{m} + \frac{m^2}{9}}{\frac{4}{m} - \frac{2m-1}{3}}$$

$$26) \frac{\frac{3x-1}{x+6} + \frac{2}{3x-1}}{\frac{x+6}{3x-1} - \frac{x+6}{2}}$$

$$27) \frac{\frac{3m}{2} - \frac{36}{m+5}}{\frac{4}{m+5} - \frac{m}{2}}$$

$$28) \frac{\frac{16}{x-4} - \frac{x-4}{x-5}}{\frac{x-5}{x-4} + \frac{x-4}{x-5}}$$

$$29) \frac{\frac{x+4}{x} - \frac{25}{x-5}}{\frac{x-5}{25} - \frac{x+4}{x-5}}$$

$$30) \frac{\frac{1}{10} - \frac{1}{3}}{\frac{3}{u-2} - \frac{5}{9}}$$

$$31) \frac{\frac{x-2}{4} - \frac{x-2}{x^2}}{\frac{4}{x^2} + \frac{x}{4}}$$

$$32) \frac{\frac{5}{2} + \frac{3x-5}{10}}{\frac{4}{3x-5} + \frac{25}{x^2}}$$

$$33) \frac{\frac{5}{4} + \frac{2}{3}}{\frac{x}{9} + \frac{x^2}{9}}$$

$$34) \frac{\frac{2}{x} + \frac{x+1}{x-6}}{\frac{x-6}{2} - \frac{x+1}{x}}$$

$$35) \frac{\frac{x}{36} - \frac{x}{6}}{\frac{5x}{36} - \frac{6}{5}}$$

$$36) \frac{\frac{6}{x} + \frac{2}{3}}{\frac{6}{5} + \frac{3}{10}}$$

$$37) \frac{\frac{4}{x^2} - \frac{5}{2}}{\frac{4}{x} - \frac{8}{x}}$$

$$38) \frac{\frac{x+1}{x^2} + \frac{x+1}{36}}{\frac{x}{4} - \frac{6}{x}}$$

$$39) \frac{\frac{3}{a-3} - \frac{1}{a}}{\frac{a}{9} - \frac{a-3}{16}}$$

$$40) \frac{\frac{a-3}{2} + \frac{1}{3}}{\frac{a}{a-3} - \frac{9}{a^2}}$$

# Answers to COMPLEX FRACTIONS

- |   |   |   |   |
|---|---|---|---|
| 1) $\frac{16 - x^2}{x^2}$                               | 2) $\frac{m^4}{36m - 36}$                               | 3) $\frac{3x - 2x^2}{4}$                                | 4) $\frac{4 - a^2 - 4a}{4a^3}$            |
| 5) $\frac{125x}{x^2 - 10}$                              | 6) $\frac{a^2 + 8a + 16}{-3a^2 - 2a + 1 - a^3}$         | 7) $\frac{25x}{125 - 9x^2}$                             | 8) $\frac{1}{6}$                          |
| 9) $\frac{28 - 2x^2 + 8x}{x^2 - 4x + 4}$                | 10) 12  | 11) $\frac{30 + a^2}{30a}$                              | 12) $\frac{x^2 + 37x + 36}{25x^2 + 150x}$ |
| 13) $\frac{24}{9 - a}$                                  | 14) $\frac{u^2 - 8u + 16}{141 + u^2 - 8u}$              | 15) $\frac{x^2 + 32}{16x^2}$                            | 16) $\frac{3x^2}{12 - x}$                 |
| 17) $\frac{x^3 - x^2 - 4x + 5}{x^4 - x^3}$              | 18) $\frac{x - 2}{8x}$                                  | 19) $\frac{9}{u + 3}$                                   | 20) $\frac{5m^2 + 16}{10m}$               |
| 21) $\frac{216 + 36m}{m^3 - 3m^2 + 216}$                | 22) $\frac{4u^2 + 40}{60 - 25u}$                        | 23) $\frac{48u - 64}{9u^2 - 72}$                        |   |
| 24) $\frac{45a - 54 + 4a^3 - 12a^2}{2a^3 - 3a^2 - 18a}$ | 25) $\frac{144 + m^3}{36 - 6m^2 + 3m}$                  | 26) $\frac{18x^2 - 8x + 26}{-3x^3 - 33x^2 - 72x + 108}$ |   |
| 27) $\frac{3m^2 + 15m - 72}{8 - m^2 - 5m}$              | 28) $\frac{24x - 96 - x^2}{2x^2 - 18x + 41}$            | 29) $\frac{25x^2 - 650x - 500}{x^3 - 35x^2 - 75x}$      | 30) $\frac{-21u + 42}{370 - 50u}$         |
| 31) $\frac{x^3 - 4x - 2x^2 + 8}{16 + x^3}$              | 32) $\frac{45x^3 - 100x^2 + 9x^4}{40x^2 + 750x - 1250}$ | 33) $\frac{69}{4x + 4x^2}$                              |   |
| 34) $\frac{6x - 24 + 2x^2}{x^3 - 14x^2 + 46x + 12}$     | 35) $-\frac{25x}{25x - 216}$                            | 36) $\frac{36 + 4x}{9x}$                                |   |
| 37) $\frac{-8 + 5x^2}{8x}$                              | 38) $\frac{x^3 + 36x + x^2 + 36}{9x^3 - 216x}$          | 39) $\frac{288a + 432}{7a^3 + 6a^2 - 81a}$              |   |
| 40) $\frac{3a^4 - 16a^3 + 21a^2}{6a^3 - 54a + 162}$     |   |   |   |