

Notes Simplify Rational Expressions

Simplify each and state the excluded values.

$$1) \frac{63x}{70x^3} = \frac{9 \cdot 7 \cdot x}{10 \cdot 7 \cdot x \cdot x \cdot x} = \frac{9}{10x^2}$$

$$2) \frac{50x^2}{15x^4} = \frac{5 \cdot 10 \cdot x \cdot x}{5 \cdot 3 \cdot x \cdot x \cdot x \cdot x} = \frac{10}{3x^2}$$

$$3) \frac{48n^3}{16n^2} = \frac{16 \cdot 3 \cdot n \cdot n \cdot n}{16 \cdot 1 \cdot n \cdot n} = 3n$$

$$4) \frac{40x^2}{12x} = \frac{4 \cdot 10 \cdot x \cdot x}{4 \cdot 3 \cdot x} = \frac{10x}{3}$$

$$5) \frac{a-2}{7a^2-14a} = \frac{a-2}{7a(a-2)} = \frac{1}{7a}$$

$$6) \frac{x^2-4x-5}{x-5} = \frac{(x-5)(x+1)}{x-5} = x+1$$

$$7) \frac{2a^2-16a}{a-8} = \frac{2a(a-8)}{a-8} = 2a$$

$$8) \frac{6v^2-30v}{v-5} = \frac{6v(v-5)}{v-5} = 6v$$

$$9) \frac{12p-28}{28p-24} = \frac{4(3p-7)}{4(7p-6)} = \frac{3p-7}{7p-6}$$

$$10) \frac{x^2-14x+45}{x^2-2x-63} = \frac{(x-9)(x-5)}{(x-9)(x+7)} = \frac{x-5}{x+7}$$

$$11) \frac{m^2-8m+16}{m^2-7m+12} = \frac{(m-4)(m-4)}{(m-4)(m-3)} = \frac{m-4}{m-3}$$

$$12) \frac{x^2-5x-36}{2x^3-18x^2} = \frac{(x-9)(x+4)}{2x^2(x-9)} = \frac{x+4}{2x^2}$$

$$13) \frac{x^2-10x+9}{x^2-2x-63} = \frac{(x-9)(x-1)}{(x-9)(x+7)} = \frac{x-1}{x+7}$$

$$14) \frac{3b^3-30b^2+27b}{b^3-13b^2+36b} = \frac{3b(b^2-10b+9)}{b(b^2-13b+36)} = \frac{3b(b-1)(b-9)}{b(b-9)(b-4)} = \frac{3(b-1)}{b-4}$$

Notes Simplify Rational Expressions

Simplify each and state the excluded values.

1) $\frac{63x}{70x^3}$

$\frac{9}{10x^2}; \{0\}$

2) $\frac{50x^2}{15x^4}$

$\frac{10}{3x^2}; \{0\}$

3) $\frac{48n^3}{16n^2}$

$3n; \{0\}$

4) $\frac{40x^2}{12x}$

$\frac{10x}{3}; \{0\}$

5) $\frac{a-2}{7a^2-14a}$

$\frac{1}{7a}; \{0, 2\}$

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

$x+1; \{5\}$

7) $\frac{2a^2-16a}{a-8}$

$2a; \{8\}$

8) $\frac{6v^2-30v}{v-5}$

$6v; \{5\}$

9) $\frac{12p-28}{28p-24}$

$\frac{3p-7}{7p-6}; \left\{\frac{6}{7}\right\}$

10) $\frac{x^2-14x+45}{x^2-2x-63}$

$\frac{x-5}{x+7}; \{9, -7\}$

11) $\frac{m^2-8m+16}{m^2-7m+12}$

$\frac{m-4}{m-3}; \{4, 3\}$

12) $\frac{x^2-5x-36}{2x^3-18x^2}$

$\frac{x+4}{2x^2}; \{0, 9\}$

13) $\frac{x^2-10x+9}{x^2-2x-63}$

$\frac{x-1}{x+7}; \{9, -7\}$

14) $\frac{3b^3-30b^2+27b}{b^3-13b^2+36b}$

$\frac{3(b-1)}{b-4}; \{0, 9, 4\}$

HW Simplify Rational Expressions

Simplify each and state the excluded values.

1) $\frac{81v^2}{81v}$

2) $\frac{54x^2}{18x^3}$

3) $\frac{40x^4}{48x^3}$

4) $\frac{24m^4}{72m^3}$

5) $\frac{r+2}{r^2-6r-16}$

6) $\frac{a^2+6a+8}{a+4}$

7) $\frac{30}{21x+24}$

8) $\frac{b-2}{4b-8}$

9) $\frac{x^2-x-72}{x^2-3x-54}$

10) $\frac{x^2-14x+49}{x^2-49}$

11) $\frac{2v^3-6v^2}{v^2-4v+3}$

12) $\frac{k^2+2k-35}{7k^2-35k}$

13) $\frac{6x^4+30x^3-36x^2}{x^2+x-30}$

14) $\frac{8v^3-48v^2-56v}{v^2-49}$

HW Simplify Rational Expressions

Simplify each and state the excluded values.

1) $\frac{81v^2}{81v}$

$v; \{0\}$

2) $\frac{54x^2}{18x^3}$

$\frac{3}{x}; \{0\}$

3) $\frac{40x^4}{48x^3}$

$\frac{5x}{6}; \{0\}$

4) $\frac{24m^4}{72m^3}$

$\frac{m}{3}; \{0\}$

5) $\frac{r+2}{r^2-6r-16}$

$\frac{1}{r-8}; \{8, -2\}$

6) $\frac{a^2+6a+8}{a+4}$

$a+2; \{-4\}$

7) $\frac{30}{21x+24}$

$\frac{10}{7x+8}; \left\{-\frac{8}{7}\right\}$

8) $\frac{b-2}{4b-8}$

$\frac{1}{4}; \{2\}$

9) $\frac{x^2-x-72}{x^2-3x-54}$

$\frac{x+8}{x+6}; \{9, -6\}$

10) $\frac{x^2-14x+49}{x^2-49}$

$\frac{x-7}{x+7}; \{7, -7\}$

11) $\frac{2v^3-6v^2}{v^2-4v+3}$

$\frac{2v^2}{v-1}; \{3, 1\}$

12) $\frac{k^2+2k-35}{7k^2-35k}$

$\frac{k+7}{7k}; \{0, 5\}$

13) $\frac{6x^4+30x^3-36x^2}{x^2+x-30}$

$\frac{6x^2(x-1)}{x-5}; \{5, -6\}$

14) $\frac{8v^3-48v^2-56v}{v^2-49}$

$\frac{8v(v+1)}{v+7}; \{7, -7\}$