

Assignment

Name _____

Date _____ Period _____

Simplify each expression.

1) $\frac{a-1}{a^2+4a-32} \cdot \frac{7a-28}{a-1}$

2) $\frac{b+5}{10b} \cdot \frac{10b^2+30b}{b+5}$

3) $\frac{7x}{x+1} \cdot \frac{x+1}{6x}$

4) $\frac{m^2-m-30}{m+5} \cdot \frac{1}{m-9}$

5) $\frac{4p}{p^2+4p-60} \cdot \frac{p-6}{8}$

6) $\frac{x-6}{x+10} \cdot \frac{3x+30}{3}$

7) $\frac{18m+54}{9} \cdot \frac{10m^2}{18m^2+54m}$

8) $\frac{r+1}{4} \cdot \frac{4r-16}{4r+4}$

9) $\frac{10}{10v+20} \cdot \frac{v^2-4}{9}$

10) $\frac{10a^2+20a}{10a} \cdot \frac{1}{2a^2}$

11) $\frac{6x}{6} \cdot \frac{12x-18}{20x-30}$

12) $\frac{3x-30}{x-10} \cdot \frac{1}{x-1}$

13) $\frac{v^2+4v-21}{v-4} \cdot \frac{v-4}{3v-9}$

14) $\frac{10}{p-10} \cdot \frac{10-p}{6p+30}$

15) $\frac{6a}{a^2+14a+40} \cdot \frac{a^2+14a+40}{a-3}$

16) $\frac{70p+90}{7} \cdot \frac{5p^2}{70p+90}$

17) $\frac{a^2-16a+63}{a-2} \cdot \frac{2-a}{a^2-7a-18}$

18) $\frac{8}{n^2+7n-18} \cdot \frac{n^2-n-2}{n+1}$

19) $\frac{5a-40}{6a^2} \cdot \frac{6a^2}{5}$

20) $\frac{1}{p-8} \cdot \frac{7p^3-56p^2}{4p^2}$

21) $\frac{n+5}{n^2+9n+20} \cdot \frac{n+3}{n+5}$

22) $\frac{4x+16}{4} \cdot \frac{10}{x+4}$

23) $\frac{p^2-16}{p-4} \cdot \frac{1}{p-5}$

24) $\frac{1}{3b} \cdot \frac{b^2+3b-18}{b-3}$

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Simplify each expression.

1) $\frac{a-1}{a^2+4a-32} \cdot \frac{7a-28}{a-1} \frac{7}{a+8}$

2) $\frac{b+5}{10b} \cdot \frac{10b^2+30b}{b+5}$
 $b+3$

3) $\frac{7x}{x+1} \cdot \frac{x+1}{6x} \frac{7}{6}$

4) $\frac{m^2-m-30}{m+5} \cdot \frac{1}{m-9} \frac{m-6}{m-9}$

5) $\frac{4p}{p^2+4p-60} \cdot \frac{p-6}{8} \frac{p}{2(p+10)}$

6) $\frac{x-6}{x+10} \cdot \frac{3x+30}{3}$
 $x-6$

7) $\frac{18m+54}{9} \cdot \frac{10m^2}{18m^2+54m} \frac{10m}{9}$

8) $\frac{r+1}{4} \cdot \frac{4r-16}{4r+4} \frac{r-4}{4}$

9) $\frac{10}{10v+20} \cdot \frac{v^2-4}{9} \frac{v-2}{9}$

10) $\frac{10a^2+20a}{10a} \cdot \frac{1}{2a^2} \frac{a+2}{2a^2}$

11) $\frac{6x}{6} \cdot \frac{12x-18}{20x-30} \frac{3x}{5}$

12) $\frac{3x-30}{x-10} \cdot \frac{1}{x-1} \frac{3}{x-1}$

13) $\frac{v^2+4v-21}{v-4} \cdot \frac{v-4}{3v-9} \frac{v+7}{3}$

14) $\frac{10}{p-10} \cdot \frac{10-p}{6p+30} - \frac{5}{3(p+5)}$

15) $\frac{6a}{a^2+14a+40} \cdot \frac{a^2+14a+40}{a-3} \frac{6a}{a-3}$

16) $\frac{70p+90}{7} \cdot \frac{5p^2}{70p+90} \frac{5p^2}{7}$

17) $\frac{a^2-16a+63}{a-2} \cdot \frac{2-a}{a^2-7a-18} - \frac{(a-7)}{a+2}$

18) $\frac{8}{n^2+7n-18} \cdot \frac{n^2-n-2}{n+1} \frac{8}{n+9}$

19) $\frac{5a-40}{6a^2} \cdot \frac{6a^2}{5}$
 $a-8$

20) $\frac{1}{p-8} \cdot \frac{7p^3-56p^2}{4p^2} \frac{7}{4}$

21) $\frac{n+5}{n^2+9n+20} \cdot \frac{n+3}{n+5} \frac{n+3}{(n+4)(n+5)}$

22) $\frac{4x+16}{4} \cdot \frac{10}{x+4}$
 10

23) $\frac{p^2-16}{p-4} \cdot \frac{1}{p-5} \frac{p+4}{p-5}$

24) $\frac{1}{3b} \cdot \frac{b^2+3b-18}{b-3} \frac{b+6}{3b}$

Assignment

Simplify each expression.

1) $\frac{r^2 + 6r - 16}{r - 10} \cdot \frac{1}{r^2 + r - 56}$

2) $\frac{7x}{21x^2 - 21x} \cdot \frac{30x - 30}{10x^2}$

3) $\frac{1}{x + 3} \cdot \frac{x^2 - 6x - 27}{5}$

4) $\frac{1}{90 + v - v^2} \cdot \frac{4v - 40}{v + 5}$

5) $\frac{10x}{10} \cdot \frac{10}{x^2 + 6x + 5}$

6) $\frac{8n + 56}{n + 7} \cdot \frac{1}{10n - 70}$

7) $\frac{1}{5r^3 + 35r^2} \cdot \frac{5r^3 + 5r^2}{r - 9}$

8) $\frac{2x + 8}{x + 4} \cdot \frac{1}{9x}$

9) $\frac{1}{k + 2} \cdot \frac{k^2 + k - 2}{4}$

10) $\frac{8}{x + 9} \cdot \frac{8x^2 + 72x}{8x}$

11) $\frac{n^2 + n - 6}{9n} \cdot \frac{1}{n + 3}$

12) $\frac{3p^2}{10p + 70} \cdot \frac{10}{p + 7}$

13) $\frac{b^2 + 16b + 64}{8b + 64} \cdot \frac{1}{b + 9}$

14) $\frac{1}{b - 2} \cdot \frac{4b^2 + 40b}{b + 10}$

15) $\frac{r - 3}{-r^2 + 4r - 3} \cdot \frac{8r - 8}{r + 3}$

16) $\frac{6k^2}{3} \cdot \frac{3}{6k^3 - 24k^2}$

17) $\frac{1}{x - 3} \cdot \frac{5x + 10}{5}$

18) $\frac{14n - 7}{6} \cdot \frac{n + 3}{7 - 14n}$

19) $\frac{m + 1}{6} \cdot \frac{6m^2}{2m + 2}$

20) $\frac{9n - 72}{n - 4} \cdot \frac{n - 4}{n + 3}$

21) $\frac{6a^2 - 30a}{a - 9} \cdot \frac{1}{6a}$

22) $\frac{x + 9}{x + 6} \cdot \frac{8x^2 + 48x}{9}$

23) $\frac{4a^2}{4a^3 - 28a^2} \cdot \frac{a^2 - 16a + 63}{8a}$

24) $\frac{8x - 64}{x + 8} \cdot \frac{x - 7}{x^2 - 15x + 56}$

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Simplify each expression.

1) $\frac{r^2 + 6r - 16}{r - 10} \cdot \frac{1}{r^2 + r - 56} = \frac{r - 2}{(r - 10)(r - 7)}$

2) $\frac{7x}{21x^2 - 21x} \cdot \frac{30x - 30}{10x^2} = \frac{1}{x^2}$

3) $\frac{1}{x + 3} \cdot \frac{x^2 - 6x - 27}{5} = \frac{x - 9}{5}$

4) $\frac{1}{90 + v - v^2} \cdot \frac{4v - 40}{v + 5} = -\frac{4}{(9 + v)(v + 5)}$

5) $\frac{10x}{10} \cdot \frac{10}{x^2 + 6x + 5} = \frac{10x}{(x + 1)(x + 5)}$

6) $\frac{8n + 56}{n + 7} \cdot \frac{1}{10n - 70} = \frac{4}{5(n - 7)}$

7) $\frac{1}{5r^3 + 35r^2} \cdot \frac{5r^3 + 5r^2}{r - 9} = \frac{r + 1}{(r + 7)(r - 9)}$

8) $\frac{2x + 8}{x + 4} \cdot \frac{1}{9x} = \frac{2}{9x}$

9) $\frac{1}{k + 2} \cdot \frac{k^2 + k - 2}{4} = \frac{k - 1}{4}$

10) $\frac{8}{x + 9} \cdot \frac{8x^2 + 72x}{8x} = 8$

11) $\frac{n^2 + n - 6}{9n} \cdot \frac{1}{n + 3} = \frac{n - 2}{9n}$

12) $\frac{3p^2}{10p + 70} \cdot \frac{10}{p + 7} = \frac{3p^2}{(p + 7)^2}$

13) $\frac{b^2 + 16b + 64}{8b + 64} \cdot \frac{1}{b + 9} = \frac{b + 8}{8(b + 9)}$

14) $\frac{1}{b - 2} \cdot \frac{4b^2 + 40b}{b + 10} = \frac{4b}{b - 2}$

15) $\frac{r - 3}{-r^2 + 4r - 3} \cdot \frac{8r - 8}{r + 3} = -\frac{8}{r + 3}$

16) $\frac{6k^2}{3} \cdot \frac{3}{6k^3 - 24k^2} = \frac{1}{k - 4}$

17) $\frac{1}{x - 3} \cdot \frac{5x + 10}{5} = \frac{x + 2}{x - 3}$

18) $\frac{14n - 7}{6} \cdot \frac{n + 3}{7 - 14n} = -\frac{(n + 3)}{6}$

19) $\frac{m + 1}{6} \cdot \frac{6m^2}{2m + 2} = \frac{m^2}{2}$

20) $\frac{9n - 72}{n - 4} \cdot \frac{n - 4}{n + 3} = \frac{9(n - 8)}{n + 3}$

21) $\frac{6a^2 - 30a}{a - 9} \cdot \frac{1}{6a} = \frac{a - 5}{a - 9}$

22) $\frac{x + 9}{x + 6} \cdot \frac{8x^2 + 48x}{9} = \frac{8x(x + 9)}{9}$

23) $\frac{4a^2}{4a^3 - 28a^2} \cdot \frac{a^2 - 16a + 63}{8a} = \frac{a - 9}{8a}$

24) $\frac{8x - 64}{x + 8} \cdot \frac{x - 7}{x^2 - 15x + 56} = \frac{8}{x + 8}$

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Simplify each expression.

1) $\frac{n^2 - n - 2}{8} \cdot \frac{8}{n^2 - 4}$

2) $\frac{6}{n - 9} \cdot \frac{6 - 14n}{42n - 18}$

3) $\frac{10b^2 - 80b}{10} \cdot \frac{10}{8 - b}$

4) $\frac{b + 2}{b + 4} \cdot \frac{6b - 30}{b^2 - 3b - 10}$

5) $\frac{6b}{45b + 36} \cdot \frac{45b + 36}{9}$

6) $\frac{1}{a - 3} \cdot \frac{a^2 - 6a + 9}{10a + 10}$

7) $\frac{n + 1}{6n} \cdot \frac{42n^2 - 6n^3}{n - 7}$

8) $\frac{15x + 21}{50x^3 + 70x^2} \cdot \frac{1}{x - 1}$

9) $\frac{x^2 + 6x + 5}{x + 5} \cdot \frac{1}{x - 9}$

10) $\frac{n^2 - 4n - 32}{n + 7} \cdot \frac{1}{n^2 - 3n - 28}$

11) $\frac{70 - 30m}{7} \cdot \frac{7}{24m^3 - 56m^2}$

12) $\frac{8}{8n - 72} \cdot \frac{-n^2 + 15n - 54}{10}$

13) $\frac{35x + 56}{7} \cdot \frac{7x}{25x + 40}$

14) $\frac{2v + 18}{2v + 6} \cdot \frac{v - 6}{v + 9}$

15) $\frac{1}{x + 4} \cdot \frac{3x + 24}{x + 8}$

16) $\frac{b - 1}{b - 5} \cdot \frac{b^2 + 3b - 40}{b - 1}$

17) $\frac{r^2 - 19r + 90}{4r} \cdot \frac{6}{6r - 54}$

18) $\frac{x^2 + 5x - 36}{x + 9} \cdot \frac{8x^2}{x - 4}$

19) $\frac{8}{n + 9} \cdot \frac{8n^2 + 40n}{8n}$

20) $\frac{m^2 + 3m - 70}{7 - m} \cdot \frac{1}{9m}$

21) $\frac{7n - 56}{6n} \cdot \frac{1}{n^2 - 16n + 64}$

22) $\frac{n - 7}{3n - 21} \cdot \frac{3n + 18}{10}$

23) $\frac{b - 3}{35b - 56} \cdot \frac{35b - 56}{8b}$

24) $\frac{10}{70r - 30} \cdot \frac{35r - 15}{4}$

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Simplify each expression.

1) $\frac{n^2 - n - 2}{8} \cdot \frac{8}{n^2 - 4} \frac{n+1}{n+2}$

2) $\frac{6}{n-9} \cdot \frac{6-14n}{42n-18} - \frac{2}{n-9}$

3) $\frac{10b^2 - 80b}{10} \cdot \frac{10}{8-b}$
 $-10b$

4) $\frac{b+2}{b+4} \cdot \frac{6b-30}{b^2-3b-10} \frac{6}{b+4}$

5) $\frac{6b}{45b+36} \cdot \frac{45b+36}{9} \frac{2b}{3}$

6) $\frac{1}{a-3} \cdot \frac{a^2-6a+9}{10a+10} \frac{a-3}{10(a+1)}$

7) $\frac{n+1}{6n} \cdot \frac{42n^2-6n^3}{n-7}$
 $-n(n+1)$

8) $\frac{15x+21}{50x^3+70x^2} \cdot \frac{1}{x-1} \frac{3}{10x^2(x-1)}$

9) $\frac{x^2+6x+5}{x+5} \cdot \frac{1}{x-9} \frac{x+1}{x-9}$

10) $\frac{n^2-4n-32}{n+7} \cdot \frac{1}{n^2-3n-28} \frac{n-8}{(n+7)(n-7)}$

11) $\frac{70-30m}{7} \cdot \frac{7}{24m^3-56m^2} - \frac{5}{4m^2}$

12) $\frac{8}{8n-72} \cdot \frac{-n^2+15n-54}{10} \frac{-n+6}{10}$

13) $\frac{35x+56}{7} \cdot \frac{7x}{25x+40} \frac{7x}{5}$

14) $\frac{2v+18}{2v+6} \cdot \frac{v-6}{v+9} \frac{v-6}{v+3}$

15) $\frac{1}{x+4} \cdot \frac{3x+24}{x+8} \frac{3}{x+4}$

16) $\frac{b-1}{b-5} \cdot \frac{b^2+3b-40}{b-1}$
 $b+8$

17) $\frac{r^2-19r+90}{4r} \cdot \frac{6}{6r-54} \frac{r-10}{4r}$

18) $\frac{x^2+5x-36}{x+9} \cdot \frac{8x^2}{x-4}$
 $8x^2$

19) $\frac{8}{n+9} \cdot \frac{8n^2+40n}{8n} \frac{8(n+5)}{n+9}$

20) $\frac{m^2+3m-70}{7-m} \cdot \frac{1}{9m} - \frac{(m+10)}{9m}$

21) $\frac{7n-56}{6n} \cdot \frac{1}{n^2-16n+64} \frac{7}{6n(n-8)}$

22) $\frac{n-7}{3n-21} \cdot \frac{3n+18}{10} \frac{n+6}{10}$

23) $\frac{b-3}{35b-56} \cdot \frac{35b-56}{8b} \frac{b-3}{8b}$

24) $\frac{10}{70r-30} \cdot \frac{35r-15}{4} \frac{5}{4}$

Assignment

Simplify each expression.

1) $\frac{10n + 50}{5} \cdot \frac{1}{n + 5}$

2) $\frac{n^2 - 16n + 60}{n - 6} \cdot \frac{3n}{7n - 70}$

3) $\frac{3}{4v} \cdot \frac{5}{3v - 27}$

4) $\frac{6}{10x} \cdot \frac{x^2 - 17x + 70}{-x^2 + 17x - 70}$

5) $\frac{20k + 50}{16k + 40} \cdot \frac{9k}{10}$

6) $\frac{1}{x - 9} \cdot \frac{2x - 18}{3}$

7) $\frac{b + 2}{b^2 - 4b - 12} \cdot \frac{9b - 54}{4b^2}$

8) $\frac{b^2 + 10b + 16}{8b + 16} \cdot \frac{2}{b + 8}$

9) $\frac{8}{45m - 18} \cdot \frac{45m - 18}{10}$

10) $\frac{8m^2 + 80m}{8m^2 - 56m} \cdot \frac{m + 2}{m + 10}$

11) $\frac{k^2 + 11k + 18}{k + 9} \cdot \frac{k - 4}{k^2 + 10k + 16}$

12) $\frac{1}{m + 3} \cdot \frac{m^2 + 18m + 80}{m + 10}$

13) $\frac{4}{2x - 4} \cdot \frac{2x + 20}{x + 10}$

14) $\frac{9n^2 - 63n}{n + 4} \cdot \frac{n + 7}{n^2 - 49}$

15) $\frac{8}{x + 5} \cdot \frac{x^2 + 6x + 5}{x^2 - 9x - 10}$

16) $\frac{6b^2 - 12b}{6b} \cdot \frac{1}{b + 8}$

17) $\frac{1}{9b} \cdot \frac{8b - 56}{b - 7}$

18) $\frac{1}{5p^2} \cdot \frac{8p + 56}{8}$

19) $\frac{9x^2 + 45x}{x^2 - x - 30} \cdot \frac{6 - x}{5}$

20) $\frac{6 - x}{x^2 - 9x + 18} \cdot \frac{x^2 + 2x - 15}{x + 6}$

21) $\frac{14b - 2b^2}{b + 4} \cdot \frac{1}{b - 7}$

22) $\frac{7r^2 - 56r}{6} \cdot \frac{1}{r - 8}$

23) $\frac{a - 5}{a^2 + 5a - 50} \cdot \frac{10a - 50}{a - 5}$

24) $\frac{x - 9}{2x - 12} \cdot \frac{x^2 - 15x + 54}{x - 9}$

Assignment

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Simplify each expression.

$$1) \frac{10n + 50}{5} \cdot \frac{1}{n + 5}$$

2

$$2) \frac{n^2 - 16n + 60}{n - 6} \cdot \frac{3n}{7n - 70} \frac{3n}{7}$$

$$3) \frac{3}{4v} \cdot \frac{5}{3v - 27} \frac{5}{4v(v - 9)}$$

$$4) \frac{6}{10x} \cdot \frac{x^2 - 17x + 70}{-x^2 + 17x - 70} - \frac{3}{5x}$$

$$5) \frac{20k + 50}{16k + 40} \cdot \frac{9k}{10} \frac{9k}{8}$$

$$6) \frac{1}{x - 9} \cdot \frac{2x - 18}{3} \frac{2}{3}$$

$$7) \frac{b + 2}{b^2 - 4b - 12} \cdot \frac{9b - 54}{4b^2} \frac{9}{4b^2}$$

$$8) \frac{b^2 + 10b + 16}{8b + 16} \cdot \frac{2}{b + 8} \frac{1}{4}$$

$$9) \frac{8}{45m - 18} \cdot \frac{45m - 18}{10} \frac{4}{5}$$

$$10) \frac{8m^2 + 80m}{8m^2 - 56m} \cdot \frac{m + 2}{m + 10} \frac{m + 2}{m - 7}$$

$$11) \frac{k^2 + 11k + 18}{k + 9} \cdot \frac{k - 4}{k^2 + 10k + 16} \frac{k - 4}{k + 8}$$

$$12) \frac{1}{m + 3} \cdot \frac{m^2 + 18m + 80}{m + 10} \frac{m + 8}{m + 3}$$

$$13) \frac{4}{2x - 4} \cdot \frac{2x + 20}{x + 10} \frac{4}{x - 2}$$

$$14) \frac{9n^2 - 63n}{n + 4} \cdot \frac{n + 7}{n^2 - 49} \frac{9n}{n + 4}$$

$$15) \frac{8}{x + 5} \cdot \frac{x^2 + 6x + 5}{x^2 - 9x - 10} \frac{8}{x - 10}$$

$$16) \frac{6b^2 - 12b}{6b} \cdot \frac{1}{b + 8} \frac{b - 2}{b + 8}$$

$$17) \frac{1}{9b} \cdot \frac{8b - 56}{b - 7} \frac{8}{9b}$$

$$18) \frac{1}{5p^2} \cdot \frac{8p + 56}{8} \frac{p + 7}{5p^2}$$

$$19) \frac{9x^2 + 45x}{x^2 - x - 30} \cdot \frac{6 - x}{5} - \frac{9x}{5}$$

$$20) \frac{6 - x}{x^2 - 9x + 18} \cdot \frac{x^2 + 2x - 15}{x + 6} - \frac{(x + 5)}{x + 6}$$

$$21) \frac{14b - 2b^2}{b + 4} \cdot \frac{1}{b - 7} - \frac{2b}{b + 4}$$

$$22) \frac{7r^2 - 56r}{6} \cdot \frac{1}{r - 8} \frac{7r}{6}$$

$$23) \frac{a - 5}{a^2 + 5a - 50} \cdot \frac{10a - 50}{a - 5} \frac{10}{a + 10}$$

$$24) \frac{x - 9}{2x - 12} \cdot \frac{x^2 - 15x + 54}{x - 9} \frac{x - 9}{2}$$

Assignment

Simplify each expression.

1) $\frac{6m+6}{10m} \cdot \frac{1}{m+1}$

2) $\frac{8x}{8x^2+56x} \cdot \frac{x+4}{x-1}$

3) $\frac{10x^3+10x^2}{10x^3-30x^2} \cdot \frac{x-3}{4x^2}$

4) $\frac{1}{3k} \cdot \frac{k^2-9k+18}{k-3}$

5) $\frac{3r}{20r^2-28r} \cdot \frac{20r^2-28r}{6}$

6) $\frac{5n}{6} \cdot \frac{6n-6}{5n}$

7) $\frac{x^2-15x+56}{x+5} \cdot \frac{1}{x-7}$

8) $\frac{10a+90}{a+9} \cdot \frac{1}{a-2}$

9) $\frac{6m^3-48m^2}{3} \cdot \frac{1}{m-8}$

10) $\frac{n-6}{n-9} \cdot \frac{-n^2+10n-9}{n-6}$

11) $\frac{v-2}{9} \cdot \frac{v+1}{2v+2}$

12) $\frac{50x^2+70x}{5x} \cdot \frac{x+9}{50x^2+70x}$

13) $\frac{x^2-16x+64}{4x} \cdot \frac{x+10}{8-x}$

14) $\frac{9a^2+81a}{2a} \cdot \frac{1}{9a}$

15) $\frac{7}{35x-7} \cdot \frac{30x-6}{x-1}$

16) $\frac{16n^2}{n-9} \cdot \frac{n-9}{n+9}$

17) $\frac{8-7p-p^2}{3p^3-3p^2} \cdot \frac{1}{p+7}$

18) $\frac{3}{4-n} \cdot \frac{9n-36}{n-8}$

19) $\frac{5x-15}{x-3} \cdot \frac{7}{x-5}$

20) $\frac{p-10}{4p} \cdot \frac{4p^3+20p^2}{p-10}$

21) $\frac{4n-8}{n-3} \cdot \frac{1}{n-2}$

22) $\frac{6x+30}{6} \cdot \frac{x-6}{x+5}$

23) $\frac{8}{m+10} \cdot \frac{2m^2+20m}{2m}$

24) $\frac{8}{x-8} \cdot \frac{50x+30}{40x+24}$

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Simplify each expression.

1) $\frac{6m+6}{10m} \cdot \frac{1}{m+1} = \frac{3}{5m}$

2) $\frac{8x}{8x^2+56x} \cdot \frac{x+4}{x-1} = \frac{x+4}{(x+7)(x-1)}$

3) $\frac{10x^3+10x^2}{10x^3-30x^2} \cdot \frac{x-3}{4x^2} = \frac{x+1}{4x^2}$

4) $\frac{1}{3k} \cdot \frac{k^2-9k+18}{k-3} = \frac{k-6}{3k}$

5) $\frac{3r}{20r^2-28r} \cdot \frac{20r^2-28r}{6} = \frac{r}{2}$

6) $\frac{5n}{6} \cdot \frac{6n-6}{5n} = n-1$

7) $\frac{x^2-15x+56}{x+5} \cdot \frac{1}{x-7} = \frac{x-8}{x+5}$

8) $\frac{10a+90}{a+9} \cdot \frac{1}{a-2} = \frac{10}{a-2}$

9) $\frac{6m^3-48m^2}{3} \cdot \frac{1}{m-8} = 2m^2$

10) $\frac{n-6}{n-9} \cdot \frac{-n^2+10n-9}{n-6} = -n+1$

11) $\frac{v-2}{9} \cdot \frac{v+1}{2v+2} = \frac{v-2}{18}$

12) $\frac{50x^2+70x}{5x} \cdot \frac{x+9}{50x^2+70x} = \frac{x+9}{5x}$

13) $\frac{x^2-16x+64}{4x} \cdot \frac{x+10}{8-x} = \frac{(x-8)(x+10)}{4x}$

14) $\frac{9a^2+81a}{2a} \cdot \frac{1}{9a} = \frac{a+9}{2a}$

15) $\frac{7}{35x-7} \cdot \frac{30x-6}{x-1} = \frac{6}{x-1}$

16) $\frac{16n^2}{n-9} \cdot \frac{n-9}{n+9} = \frac{16n^2}{n+9}$

17) $\frac{8-7p-p^2}{3p^3-3p^2} \cdot \frac{1}{p+7} = \frac{(8+p)}{3p^2(p+7)}$

18) $\frac{3}{4-n} \cdot \frac{9n-36}{n-8} = \frac{27}{n-8}$

19) $\frac{5x-15}{x-3} \cdot \frac{7}{x-5} = \frac{35}{x-5}$

20) $\frac{p-10}{4p} \cdot \frac{4p^3+20p^2}{p-10} = p(p+5)$

21) $\frac{4n-8}{n-3} \cdot \frac{1}{n-2} = \frac{4}{n-3}$

22) $\frac{6x+30}{6} \cdot \frac{x-6}{x+5} = x-6$

23) $\frac{8}{m+10} \cdot \frac{2m^2+20m}{2m} = 8$

24) $\frac{8}{x-8} \cdot \frac{50x+30}{40x+24} = \frac{10}{x-8}$

Assignment

Simplify each expression.

1) $\frac{6k+54}{6} \cdot \frac{1}{k-2}$

2) $\frac{2x+12}{x-3} \cdot \frac{1}{x+6}$

3) $\frac{r-8}{4r} \cdot \frac{3r+9}{3r-24}$

4) $\frac{1}{n+10} \cdot \frac{n^2+n-72}{n-8}$

5) $\frac{b+2}{b+4} \cdot \frac{b^2-3b-28}{b-7}$

6) $\frac{12p+24}{10} \cdot \frac{p+3}{12p+24}$

7) $\frac{28+3n-n^2}{4} \cdot \frac{4}{n^2+3n-70}$

8) $\frac{3p-15}{p-5} \cdot \frac{1}{p-2}$

9) $\frac{10}{b+9} \cdot \frac{b^2+16b+63}{b^2-b-56}$

10) $\frac{r^2+14r+40}{r+1} \cdot \frac{1}{r+4}$

11) $\frac{10r+100}{10} \cdot \frac{1}{r+10}$

12) $\frac{5}{x+3} \cdot \frac{x^2+12x+27}{x+9}$

13) $\frac{8r-56}{r-7} \cdot \frac{5}{r-1}$

14) $\frac{p-10}{p+5} \cdot \frac{p^2-9}{p^2-13p+30}$

15) $\frac{10b^3+10b^2}{3} \cdot \frac{1}{b+1}$

16) $\frac{1}{7r} \cdot \frac{-r^2+7r-12}{r^2+r-12}$

17) $\frac{5x-45}{x-1} \cdot \frac{1}{9-x}$

18) $\frac{2k-18}{k-7} \cdot \frac{k-4}{2k-18}$

19) $\frac{4k^2}{28k^3+36k^2} \cdot \frac{42k+54}{2}$

20) $\frac{p^2-9p+8}{p-1} \cdot \frac{4-p}{p-4}$

21) $\frac{n+4}{n^2-n-20} \cdot \frac{n^2+n-30}{4}$

22) $\frac{x-8}{9x-45} \cdot \frac{x-5}{x-3}$

23) $\frac{r-1}{r^2-2r+1} \cdot \frac{r-7}{r+5}$

24) $\frac{3x}{6x^2+18x} \cdot \frac{6x^2+24x}{x+4}$

Assignment

Name _____

Date _____ Period _____

Simplify each expression.

1) $\frac{6k+54}{6} \cdot \frac{1}{k-2} \frac{k+9}{k-2}$

2) $\frac{2x+12}{x-3} \cdot \frac{1}{x+6} \frac{2}{x-3}$

3) $\frac{r-8}{4r} \cdot \frac{3r+9}{3r-24} \frac{r+3}{4r}$

4) $\frac{1}{n+10} \cdot \frac{n^2+n-72}{n-8} \frac{n+9}{n+10}$

5) $\frac{b+2}{b+4} \cdot \frac{b^2-3b-28}{b-7}$

6) $\frac{12p+24}{10} \cdot \frac{p+3}{12p+24} \frac{p+3}{10}$

$b+2$

7) $\frac{28+3n-n^2}{4} \cdot \frac{4}{n^2+3n-70} - \frac{(4+n)}{n+10}$

8) $\frac{3p-15}{p-5} \cdot \frac{1}{p-2} \frac{3}{p-2}$

9) $\frac{10}{b+9} \cdot \frac{b^2+16b+63}{b^2-b-56} \frac{10}{b-8}$

10) $\frac{r^2+14r+40}{r+1} \cdot \frac{1}{r+4} \frac{r+10}{r+1}$

11) $\frac{10r+100}{10} \cdot \frac{1}{r+10}$

12) $\frac{5}{x+3} \cdot \frac{x^2+12x+27}{x+9}$

1

5

13) $\frac{8r-56}{r-7} \cdot \frac{5}{r-1} \frac{40}{r-1}$

14) $\frac{p-10}{p+5} \cdot \frac{p^2-9}{p^2-13p+30} \frac{p+3}{p+5}$

15) $\frac{10b^3+10b^2}{3} \cdot \frac{1}{b+1} \frac{10b^2}{3}$

16) $\frac{1}{7r} \cdot \frac{-r^2+7r-12}{r^2+r-12} - \frac{(r-4)}{7r(r+4)}$

17) $\frac{5x-45}{x-1} \cdot \frac{1}{9-x} - \frac{5}{x-1}$

18) $\frac{2k-18}{k-7} \cdot \frac{k-4}{2k-18} \frac{k-4}{k-7}$

19) $\frac{4k^2}{28k^3+36k^2} \cdot \frac{42k+54}{2}$

20) $\frac{p^2-9p+8}{p-1} \cdot \frac{4-p}{p-4}$

3

$-(p-8)$

21) $\frac{n+4}{n^2-n-20} \cdot \frac{n^2+n-30}{4} \frac{n+6}{4}$

22) $\frac{x-8}{9x-45} \cdot \frac{x-5}{x-3} \frac{x-8}{9(x-3)}$

23) $\frac{r-1}{r^2-2r+1} \cdot \frac{r-7}{r+5} \frac{r-7}{(r-1)(r+5)}$

24) $\frac{3x}{6x^2+18x} \cdot \frac{6x^2+24x}{x+4} \frac{3x}{x+3}$

Assignment

Name _____

Date _____ Period _____

Simplify each expression.

1) $\frac{5r^2}{6} \cdot \frac{4r-8}{5r^2}$

2) $\frac{m+10}{m-10} \cdot \frac{m+1}{5m^3+5m^2}$

3) $\frac{1}{n+2} \cdot \frac{7n+14}{4n}$

4) $\frac{a^2-9}{a+3} \cdot \frac{a+5}{9}$

5) $\frac{a^2-a-42}{a-7} \cdot \frac{1}{7a}$

6) $\frac{16k+80}{10k+50} \cdot \frac{k-8}{8}$

7) $\frac{n+5}{30n-42} \cdot \frac{15n^3-21n^2}{3n^2}$

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

9) $\frac{8}{x-9} \cdot \frac{5x-45}{8}$

10) $\frac{r-8}{30r^3+36r^2} \cdot \frac{30r^3+36r^2}{2}$

11) $\frac{n+7}{14n^3+14n^2} \cdot \frac{21n+21}{3}$

12) $\frac{x-3}{10x^3-14x^2} \cdot \frac{35x^2-49x}{7x}$

13) $\frac{b-3}{b+8} \cdot \frac{56-b-b^2}{b^2+2b-63}$

14) $\frac{b-9}{6b} \cdot \frac{6b^2+24b}{b+4}$

15) $\frac{1}{p+3} \cdot \frac{5p^3+15p^2}{10p-80}$

16) $\frac{3p^2-9p}{3-p} \cdot \frac{1}{p+6}$

17) $\frac{1}{b+9} \cdot \frac{b^2-6b-16}{b+2}$

18) $\frac{m^2+m-90}{9m^2} \cdot \frac{4}{m+10}$

19) $\frac{25v-25}{4} \cdot \frac{9}{45v-45}$

20) $\frac{60+4n-n^2}{n^2-4n-60} \cdot \frac{n-6}{7n^2}$

21) $\frac{2a^2-8a}{a^2-9a+20} \cdot \frac{1}{a-2}$

22) $\frac{1}{x-6} \cdot \frac{10x^2+70x}{x+7}$

23) $\frac{p-7}{p+1} \cdot \frac{p^2+7p-30}{p^2-10p+21}$

24) $\frac{k^2-2k-3}{k-3} \cdot \frac{k-5}{k+1}$

Assignment

Name _____

Date _____ Period _____

Simplify each expression.

1) $\frac{5r^2}{6} \cdot \frac{4r-8}{5r^2} \cdot \frac{2(r-2)}{3}$

2) $\frac{m+10}{m-10} \cdot \frac{m+1}{5m^3+5m^2} \cdot \frac{m+10}{5m^2(m-10)}$

3) $\frac{1}{n+2} \cdot \frac{7n+14}{4n} \cdot \frac{7}{4n}$

4) $\frac{a^2-9}{a+3} \cdot \frac{a+5}{9} \cdot \frac{(a+5)(a-3)}{9}$

5) $\frac{a^2-a-42}{a-7} \cdot \frac{1}{7a} \cdot \frac{a+6}{7a}$

6) $\frac{16k+80}{10k+50} \cdot \frac{k-8}{8} \cdot \frac{k-8}{5}$

7) $\frac{n+5}{30n-42} \cdot \frac{15n^3-21n^2}{3n^2} \cdot \frac{n+5}{6}$

8) $\frac{x-2}{5x^2-10x} \cdot \frac{x+9}{6x^2} \cdot \frac{x+9}{30x^3}$

9) $\frac{8}{x-9} \cdot \frac{5x-45}{8}$
5

10) $\frac{r-8}{30r^3+36r^2} \cdot \frac{30r^3+36r^2}{2} \cdot \frac{r-8}{2}$

11) $\frac{n+7}{14n^3+14n^2} \cdot \frac{21n+21}{3} \cdot \frac{n+7}{2n^2}$

12) $\frac{x-3}{10x^3-14x^2} \cdot \frac{35x^2-49x}{7x} \cdot \frac{x-3}{2x^2}$

13) $\frac{b-3}{b+8} \cdot \frac{56-b-b^2}{b^2+2b-63} - \frac{(b-3)}{b+9}$

14) $\frac{b-9}{6b} \cdot \frac{6b^2+24b}{b+4}$

 $b-9$

15) $\frac{1}{p+3} \cdot \frac{5p^3+15p^2}{10p-80} \cdot \frac{p^2}{2(p-8)}$

16) $\frac{3p^2-9p}{3-p} \cdot \frac{1}{p+6} - \frac{3p}{p+6}$

17) $\frac{1}{b+9} \cdot \frac{b^2-6b-16}{b+2} \cdot \frac{b-8}{b+9}$

18) $\frac{m^2+m-90}{9m^2} \cdot \frac{4}{m+10} \cdot \frac{4(m-9)}{9m^2}$

19) $\frac{25v-25}{4} \cdot \frac{9}{45v-45} \cdot \frac{5}{4}$

20) $\frac{60+4n-n^2}{n^2-4n-60} \cdot \frac{n-6}{7n^2} - \frac{(n-6)}{7n^2}$

21) $\frac{2a^2-8a}{a^2-9a+20} \cdot \frac{1}{a-2} \cdot \frac{2a}{(a-5)(a-2)}$

22) $\frac{1}{x-6} \cdot \frac{10x^2+70x}{x+7} \cdot \frac{10x}{x-6}$

23) $\frac{p-7}{p+1} \cdot \frac{p^2+7p-30}{p^2-10p+21} \cdot \frac{p+10}{p+1}$

24) $\frac{k^2-2k-3}{k-3} \cdot \frac{k-5}{k+1}$

 $k-5$

Assignment

Simplify each expression.

1) $\frac{7k - 28}{7} \cdot \frac{k - 9}{k - 4}$

2) $\frac{28b - 32}{6b^2} \cdot \frac{4}{28b - 32}$

3) $\frac{12n^3 - 32n^2}{30n - 80} \cdot \frac{1}{n + 4}$

4) $\frac{x^2 + 3x - 18}{x^2 + 5x - 24} \cdot \frac{4}{x + 6}$

5) $\frac{18m - 54}{18m^2 - 54m} \cdot \frac{6m}{m + 2}$

6) $\frac{x^2 + 19x + 90}{4x + 40} \cdot \frac{6}{x + 9}$

7) $\frac{6a}{45a^3 - 72a^2} \cdot \frac{45a^3 - 72a^2}{a + 10}$

8) $\frac{r^2 - r - 30}{7} \cdot \frac{1}{r + 5}$

9) $\frac{8 - x}{8x + 16} \cdot \frac{x^2 - 6x - 16}{x - 8}$

10) $\frac{m^2 - 2m - 80}{8} \cdot \frac{1}{m + 8}$

11) $\frac{p^2 - 2p - 80}{8p + 64} \cdot \frac{9}{p - 10}$

12) $\frac{1}{5x^2} \cdot \frac{x^2 - 4x - 60}{x + 6}$

13) $\frac{1}{n + 7} \cdot \frac{9n^2 + 63n}{n - 7}$

14) $\frac{x + 5}{7x + 14} \cdot \frac{x - 6}{x + 5}$

15) $\frac{6x^3 - 36x^2}{x - 6} \cdot \frac{8x}{6x^2}$

16) $\frac{42x - 6}{9x} \cdot \frac{x + 5}{42x - 6}$

17) $\frac{5x}{x + 6} \cdot \frac{10x^2 + 60x}{10x^2 - 20x}$

18) $\frac{1}{10b^2} \cdot \frac{6b^3 - 60b^2}{b - 10}$

19) $\frac{8}{5v} \cdot \frac{v^2 + 3v - 4}{8v - 8}$

20) $\frac{p^2 + 4p - 21}{p - 3} \cdot \frac{4p^2}{p + 7}$

21) $\frac{r^2 - 14r + 48}{r^2 - r - 30} \cdot \frac{r - 2}{r - 8}$

22) $\frac{27x - 27}{x + 3} \cdot \frac{x + 10}{27x - 27}$

23) $\frac{x + 10}{3} \cdot \frac{9}{10x + 100}$

24) $\frac{v - 8}{8v + 16} \cdot \frac{v^2 + 9v + 14}{v - 8}$

Assignment

Name _____

Date _____ Period _____

Simplify each expression.

1) $\frac{7k-28}{7} \cdot \frac{k-9}{k-4}$

$k-9$

2) $\frac{28b-32}{6b^2} \cdot \frac{4}{28b-32} \cdot \frac{2}{3b^2}$

3) $\frac{12n^3-32n^2}{30n-80} \cdot \frac{1}{n+4} \cdot \frac{2n^2}{5(n+4)}$

4) $\frac{x^2+3x-18}{x^2+5x-24} \cdot \frac{4}{x+6} \cdot \frac{4}{x+8}$

5) $\frac{18m-54}{18m^2-54m} \cdot \frac{6m}{m+2} \cdot \frac{6}{m+2}$

6) $\frac{x^2+19x+90}{4x+40} \cdot \frac{6}{x+9} \cdot \frac{3}{2}$

7) $\frac{6a}{45a^3-72a^2} \cdot \frac{45a^3-72a^2}{a+10} \cdot \frac{6a}{a+10}$

8) $\frac{r^2-r-30}{7} \cdot \frac{1}{r+5} \cdot \frac{r-6}{7}$

9) $\frac{8-x}{8x+16} \cdot \frac{x^2-6x-16}{x-8} \cdot \frac{8-x}{8}$

10) $\frac{m^2-2m-80}{8} \cdot \frac{1}{m+8} \cdot \frac{m-10}{8}$

11) $\frac{p^2-2p-80}{8p+64} \cdot \frac{9}{p-10} \cdot \frac{9}{8}$

12) $\frac{1}{5x^2} \cdot \frac{x^2-4x-60}{x+6} \cdot \frac{x-10}{5x^2}$

13) $\frac{1}{n+7} \cdot \frac{9n^2+63n}{n-7} \cdot \frac{9n}{n-7}$

14) $\frac{x+5}{7x+14} \cdot \frac{x-6}{x+5} \cdot \frac{x-6}{7(x+2)}$

15) $\frac{6x^3-36x^2}{x-6} \cdot \frac{8x}{6x^2}$

$8x$

16) $\frac{42x-6}{9x} \cdot \frac{x+5}{42x-6} \cdot \frac{x+5}{9x}$

17) $\frac{5x}{x+6} \cdot \frac{10x^2+60x}{10x^2-20x} \cdot \frac{5x}{x-2}$

18) $\frac{1}{10b^2} \cdot \frac{6b^3-60b^2}{b-10} \cdot \frac{3}{5}$

19) $\frac{8}{5v} \cdot \frac{v^2+3v-4}{8v-8} \cdot \frac{v+4}{5v}$

20) $\frac{p^2+4p-21}{p-3} \cdot \frac{4p^2}{p+7}$

$4p^2$

21) $\frac{r^2-14r+48}{r^2-r-30} \cdot \frac{r-2}{r-8} \cdot \frac{r-2}{r+5}$

22) $\frac{27x-27}{x+3} \cdot \frac{x+10}{27x-27} \cdot \frac{x+10}{x+3}$

23) $\frac{x+10}{3} \cdot \frac{9}{10x+100} \cdot \frac{3}{10}$

24) $\frac{v-8}{8v+16} \cdot \frac{v^2+9v+14}{v-8} \cdot \frac{v+7}{8}$

Assignment

Simplify each expression.

1) $\frac{4}{x-9} \cdot \frac{7}{7x+42}$

2) $\frac{n-2}{n^2-6n+5} \cdot \frac{-n^2+13n-40}{n-8}$

3) $\frac{-n^2+7n-6}{7n-7} \cdot \frac{6}{n-6}$

4) $\frac{10r+80}{r^2+17r+72} \cdot \frac{r+9}{6}$

5) $\frac{9}{6b^2+15b} \cdot \frac{6b^2+15b}{b+4}$

6) $\frac{7}{n+7} \cdot \frac{10n-2}{35n-7}$

7) $\frac{4n^2-28n}{n-7} \cdot \frac{1}{n+8}$

8) $\frac{70x^3+50x^2}{3x^2} \cdot \frac{3}{70x^3+50x^2}$

9) $\frac{a-6}{6-a} \cdot \frac{56a+56}{63a^2+63a}$

10) $\frac{4m^3+12m^2}{m+3} \cdot \frac{1}{m-1}$

11) $\frac{k-4}{4k+28} \cdot \frac{k+7}{k-1}$

12) $\frac{5x-35}{x-6} \cdot \frac{x+8}{56-x-x^2}$

13) $\frac{10x^3+40x^2}{8x} \cdot \frac{1}{x+4}$

14) $\frac{9-r}{8r-72} \cdot \frac{6r}{r-9}$

15) $\frac{r^2+2r-3}{r+3} \cdot \frac{r+4}{r-2}$

16) $\frac{n^2-7n-18}{n-6} \cdot \frac{n-6}{n^2-7n-18}$

17) $\frac{1}{x-4} \cdot \frac{8-2x}{3x-15}$

18) $\frac{8n}{7} \cdot \frac{7n+35}{n^2+15n+50}$

19) $\frac{3}{n^2-5n-14} \cdot \frac{n^2-5n-14}{n+10}$

20) $\frac{14v^3+18v^2}{35v+45} \cdot \frac{3v^2}{2v^2}$

21) $\frac{1}{x+9} \cdot \frac{x^2-2x-48}{x-8}$

22) $\frac{x^2-4}{x+2} \cdot \frac{3}{x-2}$

23) $\frac{1}{n+4} \cdot \frac{8n+80}{n+10}$

24) $\frac{9b+9}{9} \cdot \frac{1}{b-3}$

Assignment

Name _____

Date _____ Period _____

Simplify each expression.

1) $\frac{4}{x-9} \cdot \frac{7}{7x+42} - \frac{4}{(x-9)(x+6)}$

2) $\frac{n-2}{n^2-6n+5} \cdot \frac{-n^2+13n-40}{n-8} - \frac{(n-2)}{n-1}$

3) $\frac{-n^2+7n-6}{7n-7} \cdot \frac{6}{n-6} - \frac{6}{7}$

4) $\frac{10r+80}{r^2+17r+72} \cdot \frac{r+9}{6} - \frac{5}{3}$

5) $\frac{9}{6b^2+15b} \cdot \frac{6b^2+15b}{b+4} - \frac{9}{b+4}$

6) $\frac{7}{n+7} \cdot \frac{10n-2}{35n-7} - \frac{2}{n+7}$

7) $\frac{4n^2-28n}{n-7} \cdot \frac{1}{n+8} - \frac{4n}{n+8}$

8) $\frac{70x^3+50x^2}{3x^2} \cdot \frac{3}{70x^3+50x^2} - \frac{1}{x^2}$

9) $\frac{a-6}{6-a} \cdot \frac{56a+56}{63a^2+63a} - \frac{8}{9a}$

10) $\frac{4m^3+12m^2}{m+3} \cdot \frac{1}{m-1} - \frac{4m^2}{m-1}$

11) $\frac{k-4}{4k+28} \cdot \frac{k+7}{k-1} - \frac{k-4}{4(k-1)}$

12) $\frac{5x-35}{x-6} \cdot \frac{x+8}{56-x-x^2} - \frac{5}{x-6}$

13) $\frac{10x^3+40x^2}{8x} \cdot \frac{1}{x+4} - \frac{5x}{4}$

14) $\frac{9-r}{8r-72} \cdot \frac{6r}{r-9} - \frac{3r}{4(r-9)}$

15) $\frac{r^2+2r-3}{r+3} \cdot \frac{r+4}{r-2} - \frac{(r+4)(r-1)}{r-2}$

16) $\frac{n^2-7n-18}{n-6} \cdot \frac{n-6}{n^2-7n-18}$

1

17) $\frac{1}{x-4} \cdot \frac{8-2x}{3x-15} - \frac{2}{3(x-5)}$

18) $\frac{8n}{7} \cdot \frac{7n+35}{n^2+15n+50} - \frac{8n}{n+10}$

19) $\frac{3}{n^2-5n-14} \cdot \frac{n^2-5n-14}{n+10} - \frac{3}{n+10}$

20) $\frac{14v^3+18v^2}{35v+45} \cdot \frac{3v^2}{2v^2} - \frac{3v^2}{5}$

21) $\frac{1}{x+9} \cdot \frac{x^2-2x-48}{x-8} - \frac{x+6}{x+9}$

22) $\frac{x^2-4}{x+2} \cdot \frac{3}{x-2}$

3

23) $\frac{1}{n+4} \cdot \frac{8n+80}{n+10} - \frac{8}{n+4}$

24) $\frac{9b+9}{9} \cdot \frac{1}{b-3} - \frac{b+1}{b-3}$

Assignment

Simplify each expression.

1) $\frac{7x-42}{7} \cdot \frac{1}{5x}$

2) $\frac{k-7}{49k^2-7k^3} \cdot \frac{7k^3+35k^2}{9k}$

3) $\frac{3}{n-8} \cdot \frac{70n+20}{21n+6}$

4) $\frac{12a^2-16a}{4a} \cdot \frac{9}{15a-20}$

5) $\frac{28v+8}{v-3} \cdot \frac{v-8}{28v+8}$

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

7) $\frac{1}{n+7} \cdot \frac{4n+28}{7n^2}$

8) $\frac{r^2-18r+80}{3r^3-30r^2} \cdot \frac{3r^2}{5r}$

9) $\frac{5}{n+8} \cdot \frac{n^2+12n+32}{n^2+5n+4}$

10) $\frac{4}{n^2-9} \cdot \frac{-n^2+10n-21}{n-7}$

11) $\frac{r-8}{r+9} \cdot \frac{r+9}{5r-20}$

12) $\frac{1}{70k} \cdot \frac{k^2-4k-45}{k-9}$

13) $\frac{10n+60}{6} \cdot \frac{6}{10n-20}$

14) $\frac{v-1}{3v-12} \cdot \frac{v^2+3v-28}{v-1}$

15) $\frac{9m-27}{m+7} \cdot \frac{m+7}{m-3}$

16) $\frac{20n+100}{6} \cdot \frac{6}{12n^2+60n}$

17) $\frac{n-3}{6n} \cdot \frac{4n^2+16n}{4n^2-12n}$

18) $\frac{1}{5v^2} \cdot \frac{10v+10}{10}$

19) $\frac{40m^2-10m^3}{m^2+3m-28} \cdot \frac{m+7}{m-9}$

20) $\frac{1}{p-6} \cdot \frac{p^2-2p-24}{5}$

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

22) $\frac{x^2-4}{x+5} \cdot \frac{9}{x^2-4}$

23) $\frac{n+1}{50-25n} \cdot \frac{25n-50}{8}$

24) $\frac{5}{n^2-17n+72} \cdot \frac{n-9}{10}$

Assignment

Simplify each expression.

1) $\frac{7x-42}{7} \cdot \frac{1}{5x} \cdot \frac{x-6}{5x}$

2) $\frac{k-7}{49k^2-7k^3} \cdot \frac{7k^3+35k^2}{9k} - \frac{(k+5)}{9k}$

3) $\frac{3}{n-8} \cdot \frac{70n+20}{21n+6} \cdot \frac{10}{n-8}$

4) $\frac{12a^2-16a}{4a} \cdot \frac{9}{15a-20} \cdot \frac{9}{5}$

5) $\frac{28v+8}{v-3} \cdot \frac{v-8}{28v+8} \cdot \frac{v-8}{v-3}$

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

7) $\frac{1}{n+7} \cdot \frac{4n+28}{7n^2} \cdot \frac{4}{7n^2}$

8) $\frac{r^2-18r+80}{3r^3-30r^2} \cdot \frac{3r^2}{5r} \cdot \frac{r-8}{5r}$

9) $\frac{5}{n+8} \cdot \frac{n^2+12n+32}{n^2+5n+4} \cdot \frac{5}{n+1}$

10) $\frac{4}{n^2-9} \cdot \frac{-n^2+10n-21}{n-7} - \frac{4}{n+3}$

11) $\frac{r-8}{r+9} \cdot \frac{r+9}{5r-20} \cdot \frac{r-8}{5(r-4)}$

12) $\frac{1}{70k} \cdot \frac{k^2-4k-45}{k-9} \cdot \frac{k+5}{70k}$

13) $\frac{10n+60}{6} \cdot \frac{6}{10n-20} \cdot \frac{n+6}{n-2}$

14) $\frac{v-1}{3v-12} \cdot \frac{v^2+3v-28}{v-1} \cdot \frac{v+7}{3}$

15) $\frac{9m-27}{m+7} \cdot \frac{m+7}{m-3}$

16) $\frac{20n+100}{6} \cdot \frac{6}{12n^2+60n} \cdot \frac{5}{3n}$

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17) $\frac{n-3}{6n} \cdot \frac{4n^2+16n}{4n^2-12n} \cdot \frac{n+4}{6n}$

18) $\frac{1}{5v^2} \cdot \frac{10v+10}{10} \cdot \frac{v+1}{5v^2}$

19) $\frac{40m^2-10m^3}{m^2+3m-28} \cdot \frac{m+7}{m-9} - \frac{10m^2}{m-9}$

20) $\frac{1}{p-6} \cdot \frac{p^2-2p-24}{5} \cdot \frac{p+4}{5}$

21) $\frac{9n^3+54n^2}{7n} \cdot \frac{1}{9n^2} \cdot \frac{n+6}{7n}$

22) $\frac{x^2-4}{x+5} \cdot \frac{9}{x^2-4} \cdot \frac{9}{x+5}$

23) $\frac{n+1}{50-25n} \cdot \frac{25n-50}{8} - \frac{(n+1)}{8}$

24) $\frac{5}{n^2-17n+72} \cdot \frac{n-9}{10} \cdot \frac{1}{2(n-8)}$