

Simplifying Rationals

Simplify each.

1) $\frac{54x^2}{12x} = \frac{9x}{2}$

2) $\frac{21k^5}{14k^4}$

$$\boxed{\frac{3k}{2}}$$

3) $\frac{30p^2 + 48p}{48p^2} \xrightarrow{\cancel{6p(5p+8)}} = \frac{5p+8}{8p}$

4) $\frac{n+4}{2n+8}$

$$\frac{\cancel{n+4}}{2(\cancel{n+4})}$$

$$\boxed{\frac{1}{2}}$$

5) $\frac{7k^2 + 49k}{6k + 42} \xrightarrow{\cancel{7k(k+7)}} = \frac{7k}{6}$

6) $\frac{15r^2 + 50r}{15r^2 + 30r}$

$$\frac{\cancel{5r(3r+10)}}{\cancel{5r}(3r+6)}$$

$$\boxed{\frac{3r+10}{3r+6}}$$

7) $\frac{4p^2 + 28p}{p^2 + p - 42} \xrightarrow{\cancel{4p(p+7)}} = \frac{4p}{p-6}$

8) $\frac{9x^2 + 72x}{x^2 + 16x + 64}$

$$\frac{9x(\cancel{x+8})}{(\cancel{x+8})(x+8)} = \frac{9}{x+8}$$

9) $\frac{b^2 - 6b - 27}{b^2 - 9} \xrightarrow{\cancel{(b-9)(b+3)}} = \frac{b-9}{b-3}$

10) $\frac{x^2 + 16x + 63}{x^2 - 81}$

$$\boxed{\frac{x+7}{x-9}}$$

$$\frac{\cancel{(x+9)}(x+7)}{\cancel{(x+9)}(x-9)}$$

11) $\frac{45n}{36n^2}$

$$\frac{5}{4n}$$

12) $-\frac{56r^2}{49r^3}$

$$-\frac{8}{7r}$$

13) $\frac{36b^4}{12b^2} = 3b^2$

14) $\frac{48m}{36m^2} = \frac{4}{3m}$

$$15) \frac{5p^2 + 20p}{p+4} \quad \frac{5p(p+4)}{p+4}$$

$\frac{5p}{1}$

$$16) \frac{10n+30}{n+3} \quad \frac{10(n+3)}{n+3} = 10$$

$$17) \frac{a^2 + 13a + 42}{a+7} \quad \frac{(a+7)(a+6)}{a+7} = a+6$$

$$18) \frac{x^2 + 8x + 12}{x+6} \quad \frac{(x+6)(x+2)}{x+6}$$

$\frac{x+2}{1}$

$$19) \frac{3n^2 - 6n}{n-2} \quad \frac{3n(n-2)}{n-2} = 3n$$

$$20) \frac{2n-14}{8n^3 - 56n^2} \quad \frac{2(n-7)}{8n^2(n-7)} = \frac{1}{4n^2}$$

$$21) \frac{30a^2 + 10a}{70a^2 - 70a} \quad \frac{10a(3a+1)}{7a(10a-1)}$$

$\frac{1(3a+1)}{7(10a-1)}$

$$22) \frac{14k^2 - 16k}{7k-8} \quad \frac{2k(7k-8)}{2k(5k-2)}$$

$\frac{5k-2}{1}$

$$23) \frac{5n^3 - 30n^2}{n^2 - 7n + 6} \quad \frac{5n^2(n-6)}{(n-6)(n-7)}$$

$\frac{5n^2}{n-7}$

$$24) \frac{9v^2 - 90v}{v^2 - 5v - 50} \quad \frac{9v(v-10)}{(v-10)(v+5)}$$

$\frac{9v}{v+5}$

$$25) \frac{r^2 + 3r - 10}{r^2 + 6r + 5} \quad \frac{(r+5)(r-2)}{(r+5)(r+1)}$$

$\frac{n-2}{n+1}$

$$26) \frac{x^2 + 4x + 4}{x^2 - 8x - 20} \quad \frac{(x+2)(x+2)}{(x-10)(x+2)}$$

$\frac{x+2}{x-10}$

$$27) \frac{r^2 + r - 6}{r^2 - 5r - 24} \quad \frac{(r+3)(r-2)}{(r-8)(r+3)}$$

$\frac{r-2}{r-8}$

$$28) \frac{x^2 + 2x - 48}{x^2 + 15x + 56} \quad \frac{(x+8)(x-6)}{(x+8)(x+7)}$$

$\frac{x-6}{x+7}$

$$29) \frac{x^2 - 9}{x^2 + 8x + 15} \quad \frac{(x-3)(x+3)}{(x+5)(x+3)}$$

$\frac{x-3}{x+5}$

$$30) \frac{r^2 - 2r - 15}{r^2 - 25} \quad \frac{(r-5)(r+3)}{(r+5)(r-5)}$$

$\frac{r+3}{r+5}$