

Algebra 1.5

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Simplify each expression to lowest terms.

1) $\frac{30x^2}{21x}$

2) $\frac{80n^4}{64n^3}$

3) $\frac{10b^2}{40b^4}$

4) $\frac{81v^2}{72v^3}$

5) $\frac{9a + 30}{30a}$

6) $\frac{10n}{4n + 4}$

7) $\frac{v^2 + 8v + 16}{10v + 40}$

8) $\frac{x^2 + 2x - 63}{7x + 35}$

9)
$$\frac{5x^2 + 37x - 72}{6x^2 + 51x - 27}$$

10)
$$\frac{7n^2 - 58n - 45}{2n^3 - 20n^2 + 18n}$$

11)
$$\frac{12k^2 - 66k + 84}{18k^2 - 18k - 108}$$

12)
$$\frac{4p^3 - 32p^2 - 80p}{2p^2 - 10p - 100}$$

Simplify each expression.

13)
$$\frac{4x - 6y}{8xy} - \frac{x - y}{8xy}$$

14)
$$\frac{a - 6b}{20a^2} - \frac{2a}{20a^2}$$

15)
$$\frac{5a}{2a^2b} + \frac{2a}{4b^3}$$

16)
$$\frac{3}{2y} - \frac{6x}{6x^2}$$

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

$$18) \frac{n+2}{10n^2-20n} \div \frac{1}{12n^2-24n}$$

$$19) \frac{1}{2b^2} \cdot \frac{b^2-13b+30}{3-b}$$

$$20) \frac{5v^2+10v}{4v^2} \cdot \frac{10v}{5v^2+10v}$$

Solve each equation.

$$21) \frac{1}{b} + \frac{3}{b^2} = \frac{2}{b^2}$$

$$22) \frac{1}{2v} = \frac{1}{4v^2} + \frac{1}{4v}$$

Solve each equation.

$$23) \frac{1}{p} = \frac{6}{p-1} - \frac{3}{p-1}$$

$$24) \frac{8}{x^2-2x} - \frac{8}{x} = \frac{5}{x^2-2x}$$

Factor the common factor out of each expression.

25) $56n^5 + 64n + 72$

26) $-16b^{10} - 14b^8 + 18b^5$

Factor each completely.

27) $20n^3 + 35n^2 + 8n + 14$

28) $20m^3 - 15m^2 - 12m + 9$

29) $5a^3 + 6a^2 + 20a + 24$

30) $5r^3 - 2r^2 - 15r + 6$

31) $16x^2 - 40x + 25$

32) $4n^2 - 12n + 9$

33) $16a^2 - 25$

34) $9v^2 - 1$

Simplify. Your answer should contain only positive exponents.

35) $2v^2 \cdot 3v^2$

36) $x^2 \cdot 2x$

37) $(-2u^2v^0)^2 \cdot 2u^{-1}v^3 \cdot 2u^{-2}v^{-3}$

38) $x^0 \cdot (-2y)^3$

39) $\frac{-2u^5}{-5u^2v^{-3}}$

40) $\frac{3x^2y^{-2}}{5x^{-3}y^{-4}}$

41) $\frac{3yx^{-3}z^2}{yx^0}$

42) $\frac{-5q^0r^4}{-p^{-3}q^{-1}r^{-2}}$

$$43) \frac{(-a^{-4}b^{-4})^3}{a^3b^{-4} \cdot 2a^3b^0}$$

$$44) -\frac{yx^2 \cdot 2y^{-1}}{(-x^{-2}y^3)^2}$$

45) Solve each equation. Be sure to check your work.

$$4^{2x+3} = 1$$

$$5^{3-2x} = 5^{-x}$$

$$6^{3m} \cdot 6^{-m} = 6^{-2m}$$

$$10^{-3x} \cdot 10^x = \frac{1}{10}$$

$$3^{-2x+1} \cdot 3^{-2x-3} = 3^{-x}$$