

# Basic Algebra

## PROBLEM SOLUTIONS

**1.G.1**  $a^3 - b^3$ ,  $c(b-a)$ ,  $x + y - x^2 - y^2 - 2xy + x^2y + xy^2$

**1.G.2**  $x = -\frac{11}{12}$ ,  $x = \frac{y-4}{2y-3}$ ,  $x = \frac{yz}{1+z+2yz-3y}$ ,  $x = -3$  **or**  $x = 1$ ,  $x = \pm 4$

**2.B**  $\frac{4x-3}{x^2-1}$ ,  $-\frac{1}{4x+8}$ ,  $4 + \frac{3-2y^2}{xy}$  **or**  $\frac{3+4xy-2y^2}{xy}$ ,  $\frac{z(2x-1)}{(3x-y)}$ ,  $\frac{a^2-b^2-c^2}{abc}$

$$\frac{x^2 - y^2 z^2}{xyz}, \quad \frac{1}{x+y}, \quad \frac{4x-3y}{2(x^2-y^2)}, \quad \frac{2(ab+9)}{b^2-9}, \quad 3(a+b)$$

**3.E**  $\frac{y^2 z^5}{x}$ ,  $\frac{x^4 y^5}{z^4}$ ,  $\frac{z^3}{xy}$ ,  $\frac{y^5 z}{x^{15}}$ ,  $\frac{x^4 z^3}{y^7}$ ,  $\frac{z^8 y}{x^3}$ ,  $\frac{x^2 y}{x^2 + y}$ ,  $\frac{x^{12} z^6}{y^{15}}$

$$x^{-1} y^2 z^5, \quad x^4 y^5 z^{-4}, \quad x^{-1} y^{-1} z^3, \quad x^{-15} y^5 z, \quad x^4 y^{-7} z^3, \quad x^{-3} y z^8, \quad x^2 y (x^2 + y)^{-1}, \quad x^{12} y^{-15} z^6$$

**4.F**  $\frac{z^{7/4}}{x^{1/3} y^{8/7}}$ ,  $x^{1/6} y^{7/4} z^{1/6}$ ,  $\frac{a^{12/5} c^{33/4}}{b^{3/2}}$ ,  $\left(\frac{x}{y}\right)^{1/18} = \sqrt[18]{\frac{x}{y}}$ ,  $x^{4/5} - y^{10/3}$ ,

$$x + x^{2/3} + x^{1/2} + 2x^{5/6} + 2x^{3/4} + 2x^{7/12}, \quad \left(\frac{x^{11}y}{z}\right)^{1/6} = \sqrt[6]{\frac{x^{11}y}{z}},$$

$$x^{3/4} y^{1/2} z^{1/4} + x^{1/2} y z^{1/2} - x^{7/12} y^{1/3} z^{1/4} - x^{1/3} y^{5/6} z^{1/2}$$