4.18)

(a) $(-8)\left(\frac{1}{2}\right) + 2\left(\frac{1}{2}\right) + 3(-8)$

$-4 + 1 - 24$

$\underline{-27}$

(b) $\frac{a}{b} = \frac{-8}{1/2} = \underline{-16}$

(c)

$4(a^2b + b^2a) = 4\left((-8)^2\left(\frac{1}{2}\right) + \left(\frac{1}{2}\right)^2(-8)\right)$

$4\left(\frac{64}{2} - 2\right)$

$4(30) = \underline{120}$

(d) $(a-2)\sqrt{-ab} = -10\sqrt{-(-8)\left(\frac{1}{2}\right)}$

$= -10\sqrt{4}$

$= \underline{-20}$

4.19)

$r = -2, s = 6 \qquad t = 3r - 2s$

$t = -6 - 12$

$t = -18$

(a) -18

(b) $(2t - r)(s - 1)$

$(2(-18) + 2)(s)$

(c) $-6 - 12 + 18$

$\underline{0}$

(d)

$(-36+2)(5)$

$-34(5) = -170$

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

$\frac{-18}{-2} + \frac{-18}{6}$

$9 - 3 = 6$

4.20)

$2(-56) + 36 + 7 + 56 + 26 + 5$

$-106 + \ldots$

12

4.21)

(a) $(6a - 7b) + (3a - 2b + 9)$

$9a - 9b + 9$

(b) $8ab - ac - bc$

4.22)

(a) $r^5 \cdot t^4 = r^5 t^4$

(b) $6x^6 y^4 z^2$

(c) $x^{14} y^{35}$

(d) $(8a^9)(9a^2 b^4)$

$72a^{11} b^4$

(e) $4c^5 d^2 - 12c^5 d^2$

$-8c^5 d^2$

(f) $a^3 b^2 (2a^2 b^4)$

$2a^5 b^6$

4.23)

$\sqrt[4]{16x^8 y^4 z^{16}} = \sqrt[4]{2^4 \cdot (x^2)^4 \cdot y^4 \cdot (z^4)^4}$

$= 2 \cdot x^2 \cdot y \cdot z^4$

$= 2x^2yz^4$

4.24)

(a) $\frac{3b^2}{a}$ (b) $\frac{2x^3z^5}{16x^4z^4} = \frac{z}{8x}$

4.25)

(a) $2a + 2b - 6c - 10$ (b) $2x^5y^2 + 8x$

4.26)

$2x - 3y + z - ? = 3x + 2y$

$? = \boxed{-x - 5y + z}$

4.27)

(a) $-5w + x + 9$ (b) $2r^2 - 6s - 6r^2 - 6r + 3s$

$-4r^2 - 6r - 3s$

4.28)

$4x^2 - 8y + 28 - 4y^2 - 8x - 4$

$4y^2 - 8y + 28 - 4y^2 + 8y - 4$

$\underline{24}$

4.29)

(a) $7(x - 5y^2)$ (c) $-x^2(20x + 13yz)$

(b) $3a(7b^2 - 8)$

$x^2(-20x - 13yz)$

(d) $6rst(2t + 4r - 3s)$

4.30) $$\frac{bc}{abc} + \frac{ac}{abc} + \frac{ab}{abc} = \frac{bc+ac+ab}{abc}$$

4.31) $$\frac{3x}{14y^2z^4} - \frac{5y}{18x^3z^2} = \frac{27x^4}{126x^3y^2z^4} - \frac{35y^3z^2}{126x^3y^2z^4}$$

$$= \frac{27x^4 - 35y^3z^2}{126x^3y^2z^4}$$

4.32) $$\frac{2a^2 - 4a}{3a - 6} + \frac{2b^2 - 4b}{8b - 16}$$

$$\frac{2a(a-2)}{3(a-2)} + \frac{2b(b-2)}{8(b-2)} = \frac{2a}{3} + \frac{b}{4}$$

$$= \boxed{\frac{8a + 3b}{12}}$$

4.33) $3x + 2y + z = 4$

$3x = 4 - 2y - z$

$x = \frac{4 - 2y - z}{3}$