

They forget the π

9. cylinder: $r = 2x+1, h = 2x-1$

a) $SA = 2\pi r^2 + 2\pi r h$

$$= 2\pi((2x+1)^2 + 2\pi(2x+1)(2x-1))$$

$$= 2\pi(4x^2 + 4x + 1) + 2\pi(4x^2 - 1)$$

$$= 8\pi x^2 + 8\pi x + 2\pi + 8\pi x^2 - 2\pi$$

$$= 16\pi x^2 + 8\pi x$$

b) $V = \pi r^2 h$

$$= \pi(2x+1)^2(2x-1)$$

$$= \pi(2x+1)(2x+1)(2x-1)$$

$$= \pi(4x^2-1)(2x-1)$$

$$= \pi(8x^3 - 2x + 4x^2 - 1)$$

$$= 8\pi x^3 + 4\pi x^2 - 2\pi x - \pi$$

5.e) $(9a-5)^3$

$$= (9a-5)(9a-5)(9a-5)$$

$$= (9a-5)(81a^2 - 90a + 25)$$

$$= 729a^3 - 810a^2 + 225a - 405a^2 + 450a - 125$$

$$= 729a^3 - 1215a^2 + 675a - 125$$

f) $2(3a+4)(a-6) - (3-a)^2 + 4(5-a)$

$$= 2(3a^2 - 14a - 24) - (9 - 6a + a^2) + 20 - 4a$$

$$= 6a^2 - 28a - 48 - 9 + 6a - a^2 + 20 - 4a$$

$$= 5a^2 - 26a - 37$$

e) $3(2x-1)^2 - 5(4x+1)^2$

$$= 3(4x^2 - 4x + 1) - 5(16x^2 + 8x + 1)$$

$$= 12x^2 - 12x + 3 - 80x^2 - 40x - 5$$

$$= -68x^2 - 52x - 2$$

4. c) $(x+3)(x-3) + (5x-6)(3x-7)$

$$= x^2 - 9 + 15x^2 - 53x + 42$$

$$= 16x^2 - 53x + 33$$

No the L.S. yields a trinomial.

2. a) $15(3x+2)^2 = 9x^2 + 4$

prefer putting in correct order Text has this answer.

$$= 6x^2 - 10x^3 + 8xy$$

1a) $2x(3x-5x^2+4y)$

d) $(x+1)(x^2+2x-3)$

$$= x^3 + 2x^2 - 3x + x^2 + 2x - 3$$

$$= x^3 + 3x^2 - x - 3$$

10. a) $(x-3)^2$ and $(3-x)^2$ are equal b/c both give the expanded expression $x^2 - 6x + 9$

b) L.S. = $(x-3)^3$

$$\begin{aligned}
 &= (x-3)(x^2 - 6x + 9) \\
 &= x^3 - 6x^2 + 9x - 3x^2 + 18x - 27 \\
 &= x^3 - 9x^2 + 27x - 27 \\
 \text{R.S.} &= (3-x)^3 \\
 &= (3-x)(x^2 - 6x + 9) \\
 &= 3x^2 - 18x + 27 - x^3 + 6x^2 - 9x \\
 &= -x^3 + 9x^2 - 27x + 27
 \end{aligned}$$

$\therefore (x-3)^3 \neq (3-x)^3$

11. a) $(x^2 + 2x - 1)^2$

$= (x^2 + 2x - 1)(x^2 + 2x - 1)$

$= x^4 + 2x^3 - x^2 + 2x^3 + 4x^2 - 2x - x^2 - 2x + 1$

$= x^4 + 4x^3 + 2x^2 - 4x + 1$

11. c) $(x^3 + x^2 + x + 1)(x^3 - x^2 - x - 1)$

$= x^6 - x^5 - x^4 - x^3 + x^5 - x^4 - x^3 - x^2 + x^4 - x^3 - x^2 - x + x^3 - x^2 - x - 1$

$= x^6 - x^4 - 2x^3 - 3x^2 - 2x - 1$

P.112

1. a) $\frac{6-4t}{2} = 3-2t$

b) $\frac{3q^2}{2} = \frac{26q^2}{2}$

c) $\frac{1}{b^2} \cdot \frac{2ab^3}{3a^2} = \frac{2ab}{3a^2}$

4. a) $\frac{7x}{14x^3 - 7x^2 + 21x} = 2x^2 - x + 3$

b) $\frac{-\frac{1}{3}xy^3}{5xy^3} = \frac{-xy}{15}$

14a) If $f(x)$ has 2 terms and $g(x)$ has 3 terms, the unsimplified expression when the two are mult. has $2 \times 3 = 6$ terms. In general mult. the # of terms of the first poly. with the # of terms of the second. eg $x(x+2)$ has 1×2 or two terms $= x^2 + 2x$ and $(x+2)(x+2)$ has 2×2 or 4 terms when mult. simplified.