

SHOW ALL WORK!

1. Write the three *Special Products*.

$$(a+b)^2 = a^2 + 2ab + b^2 \quad (a-b)^2 = a^2 - 2ab + b^2 \quad (a+b)(a-b) = a^2 - b^2$$

2. Add $3y^2 - 10y - 6$ and $8y^2 - 8y - 9$.

$$\begin{array}{r} 3y^2 - 10y - 6 \\ + 8y^2 - 8y - 9 \\ \hline 11y^2 - 18y - 15 \end{array}$$

3. Subtract $3y^2 - 10y - 6$ from $8y^2 - 8y - 9$.

$$\begin{array}{r} 8y^2 - 8y - 9 \\ - (3y^2 - 10y - 6) \\ \hline 5y^2 + 2y - 3 \end{array}$$

4. Is $x+3$ a polynomial? If so, give its degree.

Yes, 1

5. Is x^2+3 a polynomial? If so, give its degree.

Yes, 2

6. Is $x^{-1}+3$ a polynomial? If so, give its degree.

No

7. Is $x^{\frac{1}{2}}+3$ a polynomial? If so, give its degree.

No

Simplify.

8. $(2x-7)^2$

$$\begin{array}{l} 4x^2 - 14x - 14x + 49 \\ 4x^2 - 28x + 49 \end{array}$$

9. $(6a-4b)(4a+3b)$

$$\begin{array}{l} 24a^2 + 18ab - 16ab - 12b^2 \\ 24a^2 + 2ab - 12b^2 \end{array}$$

10. $(3x+4)(3x-4)$

$$9x^2 - 16$$

11. $(3a-4)(2a+7)$

$$\begin{array}{l} 6a^2 + 21a - 8a - 28 \\ 6a^2 + 13a - 28 \end{array}$$

12. $(8x+1)^2$

$$\begin{array}{l} 64x^2 + 8x + 8x + 1 \\ 64x^2 + 16x + 1 \end{array}$$

13. $(2x+1)(2x-1)$

$$4x^2 - 1$$

Simplify.

14. $4(x-2)+3(4x-1)-(6x+2)$

$$4x - 8 + 12x - 3 - 6x - 2$$

$$10x - 13$$

16. $(3x+1)^3$

$$(9x^2+6x+1)(3x+1)$$

$$27x^3+9x^2+18x^2+6x+3x+1$$

$$27x^3+27x^2+9x+1$$

15. $8a-2a[4+3(a-2)]$

$$8a-2a[4+3a-6]$$

$$8a-2a[3a-2]$$

$$8a-6a^2+4a$$

$$-6a^2+12a$$

17. $3y-2\{x+2x[3y-2(x+1)]\}$

$$3y-2\{x+2x[3y-2x-2]\}$$

$$3y-2\{x+6xy-4x^2-4x\}$$

$$3y-2\{6xy-4x^2-3x\}$$

$$3y-12xy+8x^2+6x$$