

TT6 – 7 Possible Solutions

TT 6. *Foundations and Pre-calculus Mathematics 10* (Pearson), questions 8 and 10 on page 186

$$\begin{aligned} 8. \text{ a) } (3y - 2)(y^2 + y - 8) &= 3y(y^2 + y - 8) - 2(y^2 + y - 8) \\ &= 3y^3 + 3y^2 - 24y - 2y^2 - 2y + 16 \\ &= 3y^3 + y^2 - 26y + 16 \end{aligned}$$

$$\begin{aligned} \text{b) } (4r + 1)(r^2 - 2r - 3) &= 4r(r^2 - 2r - 3) + 1(r^2 - 2r - 3) \\ &= 4r^3 - 8r^2 - 12r + r^2 - 2r - 3 \\ &= 4r^3 - 7r^2 - 14r - 3 \end{aligned}$$

$$\begin{aligned} \text{c) } (b^2 + 9b - 2)(2b - 1) &= b^2(2b - 1) + 9b(2b - 1) - 2(2b - 1) \\ &= 2b^3 - b^2 + 18b^2 - 9b - 4b + 2 \\ &= 2b^3 + 17b^2 - 13b + 2 \end{aligned}$$

$$\begin{aligned} \text{d) } (x^2 + 6x + 1)(3x - 7) &= x^2(3x - 7) + 6x(3x - 7) + 1(3x - 7) \\ &= 3x^3 - 7x^2 + 18x^2 - 42x + 3x - 7 \\ &= 3x^3 - 11x^2 - 39x - 7 \end{aligned}$$

$$\begin{aligned} 10. \text{ a) } (x + 2y)(x - 2y - 1) &= x(x - 2y - 1) + 2y(x - 2y - 1) \\ &= x^2 - 2xy - x + 2xy - 4y^2 - 2y \\ &= x^2 - 4y^2 - x - 2y \end{aligned}$$

$$\begin{aligned} \text{b) } (2c - 3d)(c + d + 1) &= 2c(c + d + 1) - 3d(c + d + 1) \\ &= 2c^2 + 2cd + 2c - 3cd - 3d^2 - 3d \\ &= 2c^2 - 3d^2 - cd + 2c - 3d \end{aligned}$$

$$\begin{aligned} \text{c) } (a - 5b)(a + 2b - 4) &= a(a + 2b - 4) - 5b(a + 2b - 4) \\ &= a^2 + 2ab - 4a - 5ab - 10b^2 + 20b \\ &= a^2 - 10b^2 - 3ab - 4a + 20b \end{aligned}$$

$$\begin{aligned} \text{d) } (p - 2q)(p + 4q - r) &= p(p + 4q - r) - 2q(p + 4q - r) \\ &= p^2 + 4pq - pr - 2pq - 8q^2 + 2qr \\ &= p^2 - 8q^2 + 2pq - pr + 2qr \end{aligned}$$

TT 7. a) Sometimes, evaluating both sides of an expression with a particular value of x , such as zero, may result in identical results. This may be deceiving as the particular x -value may be the only value for which the expression is true. A student may be led to the conclusion that the original statement is true, when it is only true for the chosen x -value. Therefore, the student should choose values that are more precise, such as $x = 3.2$. However, as the number is more precise, the calculation can be more laborious.

b) Often, single-digit numbers besides 0 and 1 are appropriate. To be certain, a student could verify an expression with two or more x -values.