MCINTYRE MATHS · YEAR 10 MATHEMATICS

Practice worksheet

Lesson 3 · Multiplying and dividing polynomials

Name: _____ Date: _____

Expanding

1. Expand and simplify.
(a) $3x(x^2 - 2x + 5)$ (b) $(x - 4)(x^2 + 3x - 2)$ (c) $(2x + 1)(x^3 - x + 3)$

2. Let $P(x) = x^2 - 2x + 3$ and $Q(x) = x^3 + x - 1$. Expand and simplify $P(x) \times Q(x)$.

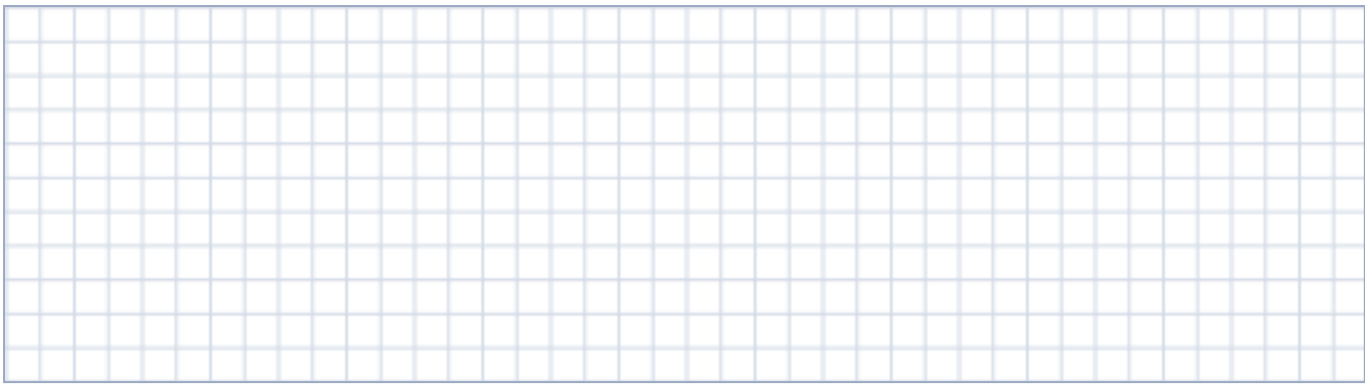
3. Expand and simplify $(x^2 - x + 1)^2$.

4. Consider $(x^2 + x + 1)(x^3 + x^2 + x + 1)$.

(a) How many terms are there before simplifying?

(b) What is the degree of the product?

(c) What is the greatest number of terms the simplified answer could have?



Dividing

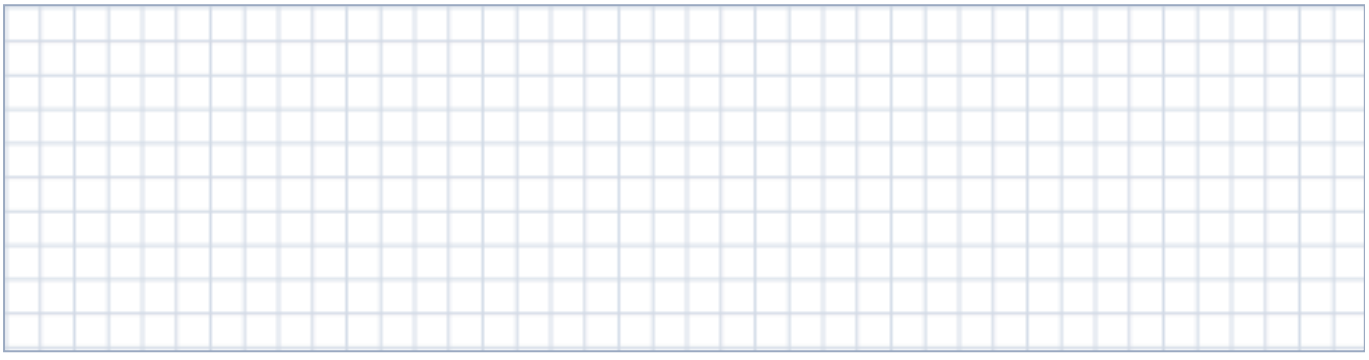
5. Divide and write in the form $P(x) = A(x)Q(x) + R(x)$.

(a) $x^3 + 4x^2 - x - 6$ by $(x - 1)$

(b) $2x^3 - 5x^2 + 3x - 7$ by $(x - 2)$



6. Divide $x^3 - 8$ by $(x - 2)$. Write the missing terms with zero coefficients.



7. Divide $3x^3 + 2x^2 - 5x + 4$ by $(x + 1)$ and write in the form $P(x) = (x + 1)Q(x) + R(x)$.

8. Let $P(x) = x^3 - 6x^2 + 11x - 6$.

(i) Show that $P(1) = 0$.

(ii) Divide $P(x)$ by $(x - 1)$.

(iii) Hence write $P(x)$ as a product of three linear factors.