

## Arithmetic with Polynomials - Worksheet 2

1. If  $p(a) = 5$ , is  $x - a$  a factor of  $p(x)$ ?
2. If  $\frac{x^2+4x-2}{x-3} = x+7$ , remainder 19, rewrite  $x^2 + 4x - 2$  as  $q(x) \times (x - a) + p(a)$ . What is  $a$ ?
3. If  $\frac{2x^2-3x+1}{x+4} = 2x - 11$ , remainder -43, rewrite  $2x^2 - 3x + 1$  as  $q(x) \times (x - a) + p(a)$ . What is  $a$ ?
4. What is the remainder when  $\frac{-x^2+6x+2}{x+1} = -x + 7$ ? Rewrite  $-x^2 + 6x + 2$  as  $q(x) \times (x - a) + p(a)$ . What is  $a$ ?
5. What does  $\frac{2x^2+3x+1}{x}$  equal? Rewrite  $2x^2 + 3x + 1$  as  $q(x) \times (x - a) + p(a)$ . What is  $a$ ?
6. What is  $(x + 4)(x - 3)$ ? What is the remainder when  $x^2 + x - 13$  is divided by  $(x + 4)$ ?
7. Re-write  $x^2 + x - 13$  in the form  $q(x) \times (x - a) + p(a)$ .
8. What is  $(x^2 + 2x - 1)(x + 3)$ ? Rewrite  $x^3 + 5x^2 + 5x$  in the form  $q(x) \times (x + 3) + p(a)$ . What are  $q(x)$  and  $p(a)$ ?
9. What is  $(x + 4)(x + 2)$ ? Find the smallest whole number remainder when  $x^2 + 6x + 10$  is divided by either  $(x + 4)$  or  $(x + 2)$ .
10. If we rewrite  $x^2 - 4$  as  $q(x) \times (x - a) + p(a)$ , which values of  $a$  will make  $p(a) = 0$ ?

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