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 $p(a) = 0$?