

## Factor and Remainder Theorem

**State if the given binomial is a factor of the given polynomial.**

1)  $(k^3 - 8k^2 + 7k + 36) \div (k - 4)$

2)  $(6n^3 + 12n^2 - 25n - 19) \div (n + 3)$

3)  $(2n^3 - 21n^2 + 56n - 49) \div (n - 7)$

4)  $(2n^3 - 5n^2 + 3n - 9) \div (n - 2)$

5)  $(x^3 - 6x^2 - 46x + 60) \div (x - 10)$

6)  $(n^3 - 4n^2 - 69n + 91) \div (n - 10)$

**Evaluate each function at the given value. Tell whether the given is a root.**

7)  $f(a) = a^4 + 4a^3 - 9a^2 - 3a - 4$  at  $a = 2$

8)  $f(x) = -4x^4 + 12x^3 - 9x^2 + 2x$  at  $x = 2$

9)  $f(a) = a^4 + 4a^3 - 6a^2 - 16a + 8$  at  $a = 2$

10)  $f(a) = 2a^4 - 9a^3 + 7a^2 + 6a - 7$  at  $a = 3$

11)  $f(x) = x^3 - x^2 - 4x - 16$  at  $x = 3$

12)  $f(m) = 2m^4 - m^3 - 16m^2 - 2m + 15$  at  $m = 3$