



QA Applying Factor Theorem

Q1. In each of the following cases, use the factor theorem to check whether $g(x)$ is a factor of $p(x)$

- a) $g(x) = x - 1$ $p(x) = 11x^3 - 8x^2 + x - 4$
- b) $g(x) = x + 1$ $p(x) = 9x^3 - 8x^2 + x - 2$
- c) $g(x) = 2x - 1$ $p(x) = 8x^3 - 4x^2 + 4x + 1$

Q2. Given that $g(x)$ is a factor of $p(x)$, find the value of k in each of the following cases.

- a) $g(x) = x - 1$ $p(x) = 4x^3 - 3x^2 + kx - 7$
- b) $g(x) = x + 1$ $p(x) = 7x^3 + 5x^2 + 2x + k$
- c) $g(x) = 2x - 1$ $p(x) = 8x^3 - 4x^2 - 2x + k$

Q3. Factorise the following quadratic polynomials.

- a) $2x^2 + x - 3$
- b) $7x^2 + 13x - 2$
- c) $2x^2 - 11x - 6$
- d) $6x^2 + 7x - 5$
- e) $6x^2 - 5x - 6$

Q4. Factorise the following cubic polynomials.

- a) $2x^3 - 3x^2 - 2x + 3$
- b) $3x^3 + x^2 - 8x + 4$
- c) $2x^3 - 7x^2 + 2x + 3$
- d) $x^3 + 2x^2 - 5x - 6$
- e) $2x^3 - x^2 - 8x + 4$



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Answers:

Q1.

- a) $p(1) = 0$. So, $g(x)$ is a factor of $p(x)$
- b) $p(-1) = -20$. So, $g(x)$ is not a factor of $p(x)$
- c) $p(\frac{1}{2}) = 3$. So, $g(x)$ is not a factor of $p(x)$

Q2.

- a) $k = 6$
- b) $k = 4$
- c) $k = 1$

Q3.

- a) $(2x + 3)(x - 1)$
- b) $(7x - 1)(x + 2)$
- c) $(x - 6)(2x + 1)$
- d) $(3x + 5)(2x - 1)$
- e) $(2x - 3)(3x + 2)$

Q4.

- a) $(x + 1)(x - 1)(2x - 3)$
- b) $(x + 2)(x - 1)(3x - 2)$
- c) $(x - 1)(2x + 1)(x - 3)$
- d) $(x + 1)(x + 3)(x - 2)$
- e) $(x + 2)(x - 2)(2x - 1)$