

Use the Remainder Theorem to find the remainder for each of the following divisions:

1.  $\frac{x^3 - 4x^2 + 1}{x + 4}$

2.  $\frac{2x^4 - 2x^3}{x - 3}$

3. Is  $(r + 1)$  a factor of  $2r^3 - 13r^2 + 23r - 12$ ? Find out by using the Factor theorem.

4. Is  $(2r - 3)$  a factor of  $6r^4 - 17r^3 - 46r^2 + 77r - 20$ ? Find out by using the Factor theorem.

5. Write a polynomial function in standard form that meets the stated conditions.

a. The zeros are 5,  $-\frac{1}{2}$  and 1.

b. The zeros are  $\frac{1}{2}$ , 1 and 2.

6. Is  $r = 2$  a zero of  $2r^3 - 7r^2 + 7r - 2$ ? 7. Find the value of  $q$  so that  $\frac{2qx^2 - qx - 3}{x - 2}$  has a remainder of **33**.

8. Find the value of  $k$  so that  $\frac{kx^2 - x - 5k}{x + 1}$  has a remainder of **-3**.

1)  $R = -127$  2)  $R = 108$  3) Find  $F(-1)$ . No. 4) Find  $F\left(\frac{3}{2}\right)$ . No. 5a)  $2x^3 - 11x^2 + 4x + 5$  5b)  $2x^3 - 7x^2 + 7x - 2$   
6) Yes (See the last problem you did!) 7)  $q = 6$  8)  $k = -1$