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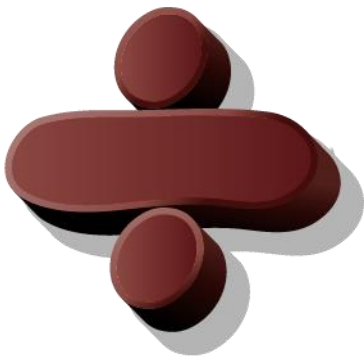
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# SYNTHETIC DIVISION WORKSHEETS

Use synthetic division for the problems from 1-6 and write the answer of the form  $\text{Quotient} + \frac{\text{Remainder}}{\text{Divisor}}$ .



1)  $(x^3 + 2x^2 - 3x + 1) \div (x - 2)$

2)  $(3x^3 - 6x^2 + x - 1) \div (x - 1)$

3)  $(3a^4 + 4a^3 + 2a^2 + 3a - 1) \div (a + 2)$

4)  $(2x^4 - x^3 - 32x^2 + 31x + 60) \div (x - 3)$

5)  $(3s^5 + 20s^4 + 10s^3 - 13s^2 + 7s - 3) \div (s + 6)$

6)  $(6x^3 - 7x^2 - 15x + 1) \div (3x + 1)$

7) Determine whether  $(2x + 1)$  is a factor of the polynomial  
 $p(x) = 2x^4 + x^3 + 6x^2 + 7x + 2$ .

8) The area of a rectangular garden is  $(2x^3 + 11x^2 - 16x - 105)$  square units. Its length is  $(x - 3)$  units. Find its breadth.



- 9) If  $(x - 5)$  is a factor of the polynomial  $p(x) = 2x^3 - 15x^2 + 22x + 15$ , factorize the polynomial completely.
- 10) Show that  $(x - 2)$  and  $(x + 1)$  are the factors of the polynomial  $p(x) = 6x^4 + x^3 - 17x^2 - 16x - 4$  by using synthetic division.

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- Barbara Cabrera

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**ANSWERS**

1)	$x^2 + 4x + 5 + \frac{11}{x-2}$
2)	$3x^2 - 3x - 2 - \frac{3}{x-1}$
3)	$3a^3 - 2a^2 + 6a - 9 + \frac{17}{a+2}$
4)	$2x^3 + 5x^2 - 17x - 20$
5)	$3s^4 + 2s^3 - 2s^2 - s + 13 - \frac{81}{s+6}$
6)	$2x^2 - 3x - 4 + \frac{5}{3x+1}$
7)	Yes
8)	$(2x^2 + 17x + 35)$ units
9)	$(x-5)(2x+1)(x-3)$
10)	NA

## FUN FACT

1. A factor of a polynomial divides it without any remainder.
2. While doing synthetic division, the terms must be in the decreasing order of the powers.
3. If any term of an exponent is missing, we write 0 in place of it in the first row of synthetic division.

