

**Evaluate Applying Synthetic and Long Division** Name: \_\_\_\_\_

1.  $(5x^3 + 8x^2 - x + 6) \div (x + 2)$

2.  $(2x^2 - 17x - 38) \div (2x + 3)$

**Factor the following completely.**

3.  $(x + 3)$  is a factor of  $f(x)$   $f(x) = x^3 - 19x - 30$

4. Show that  $(x-2)$  and  $(x+3)$  are factor of  $2x^4 + 7x^3 - 4x^2 - 27x - 18$ , then factor and solve  $2x^4 + 7x^3 - 4x^2 - 27x - 18$

5. Find all the zeros of the polynomial if  $(x+3)$  is a factor of  $(5x^3 + 18x^2 + 7x - 6)$

7. If  $f(x) = 4x^3 + 10x^2 - 3x - 8$ , find  $f(-1)$

8. Use synthetic division to find each function value. Show all work.

$$g(x) = x^6 - 4x^4 + 3x^2 + 2$$

a.  $g(2) =$  \_\_\_\_\_

b.  $g(-1) =$  \_\_\_\_\_

9. If  $(x + 2)$  is a factor of the polynomial  $x^3 + 5x^2 + kx + 10$ , then the value of  $k$  is .....

10. If  $-3$  is a zero of the polynomial  $2x^3 + 9x^2 - kx - 6$ , then the value of  $k$  is....