JavaScript

```
// A validator to check and verify something has a factored form...
function factorCheck(f,g) {
    // This validator is designed to check that a student is submitting a factored polynomia
    //  Checking that there are the correct number of non-numeric and non-inverse factors as
    //  Checking that the submitted answer and the expected answer are the same via real Xro
    //  Checking that the outer most (last to be computed when following order of operations

    var operCheck = f.tree[0];// Check to see if the root operation is multiplication at enc
    var studentFactors = f.tree.length;// Temporary number of student-provided factors (+1 b

    // Now we adjust the length to remove any numeric factors, or division factors, etc to a
    for (var i = 0; i < f.tree.length; i++) {
        if ((typeof f.tree[i] === 'number')||(f.tree[i][0] == '-')||(f.tree[i][0] == '/')) {
            studentFactors = studentFactors - 1;
        }
    }

    // Now we do the same with the provided answer, in case sage or something provides a wei
    var answerFactors = g.tree.length;

    // Adjust length in the same way, so that it will match the students if it should.
    for (var i = 0; i < g.tree.length; i++) {
        if (typeof g.tree[i] === 'number') {
            answerFactors = answerFactors - 1;
        }
    }
    console.log('student input tree...');
    console.log(f.tree);

    console.log('expected tree.');
    console.log(g.tree);
    // Note: An especially dedicated student could pad with weird factors that are happen to
    // For example, a student could enter sin^2(x)+cos^2(x) as a multiplicative factor to pa
    // This would be somewhat difficult to think of, even on purpose.
    // Until I can reliably evaluate the factors themselves as functions though, there isn't

    return ((f.equals(g))&&(studentFactors==answerFactors)&&(operCheck=='*'))
    }
```

Note: This is using an experimental factoring validator. If you verified that your answer should be correct and Xronos won't take it, please email your instructor to see if there is a problem.

Problem 1 *Factor the following quadratic using the AC-Method.*

$$p(x) = -16\,x^2 + 12\,x - 2 = \boxed{(8\,x - 2)(-2\,x + 1)}$$

Feedback(*`attempt`*): *Remember to multiply the A term and the B term and try to find values that multiple to that new value (32), but add to 12. Use those to numbers to split the middle term and then factor by grouping (as shown in the video).*

Problem 2 *Factor the following quadratic using the AC-Method*

$$p(x) = -18\,x^2 - 70\,x + 8 = \boxed{(9\,x - 1)(-2\,x - 8)}$$

Feedback(*`attempt`*): *Remember to multiply the A term and the B term and try to find values that multiple to that new value (−144), but add to −70. Use those to numbers to split the middle term and then factor by grouping (as shown in the video).*

Problem 3 *Factor the following quadratic using the AC-Method*

$$p(x) = 3\,x^2 - 11\,x + 6 = \boxed{(3\,x - 2)(x - 3)}$$

Feedback(*`attempt`*): *Remember to multiply the A term and the B term and try to find values that multiple to that new value (18), but add to −11. Use those to numbers to split the middle term and then factor by grouping (as shown in the video).*

Problem 4 *Factor the following quadratic using the AC-Method*

$$p(x) = 27\,x^2 + 51\,x - 6 = \boxed{(9\,x - 1)(3\,x + 6)}$$

Feedback(*`attempt`*): *Remember to multiply the A term and the B term and try to find values that multiple to that new value (−162), but add to 51. Use those to numbers to split the middle term and then factor by grouping (as shown in the video).*
