

## Readiness Assurance Outcomes

Before beginning this module, each student should be able to...

- Add Euclidean vectors and multiply Euclidean vectors by scalars.
- Add complex numbers and multiply complex numbers by scalars.
- Add polynomials and multiply polynomials by scalars.
- Perform basic manipulations of augmented matrices and linear systems (**Standard(s) E1,E2,E3**).

## Readiness Assurance Resources

The following resources will help you prepare for this module.

- <https://www.khanacademy.org/math/prec calculus/vectors-prec calc/vector-addition-subtraction/v/adding-and-subtracting-vectors>
- <https://www.khanacademy.org/math/prec calculus/vectors-prec calc/combined-vector-operations/v/combined-vector-operations-example>
- <https://www.khanacademy.org/math/prec calculus/imaginary-and-complex-numbers/adding-and-subtracting-v/adding-complex-numbers>
- <https://www.khanacademy.org/math/algebra/introduction-to-polynomial-expressions/adding-and-subtracting-polynomials-1>

**Readiness Assurance Test**

Choose the most appropriate response for each question.

- 1) Simplify the following vector expression.

$$2 \begin{bmatrix} 3 \\ -1 \\ 0 \end{bmatrix} - 3 \begin{bmatrix} 0 \\ 2 \\ 1 \end{bmatrix}$$

(a)  $\begin{bmatrix} 0 \\ 4 \\ -7 \end{bmatrix}$

(b)  $\begin{bmatrix} 6 \\ -8 \\ -3 \end{bmatrix}$

(c)  $\begin{bmatrix} 3 \\ 2 \\ -5 \end{bmatrix}$

(d)  $\begin{bmatrix} -2 \\ 0 \\ 1 \end{bmatrix}$

- 2) Simplify the complex number expression  $-4(3 - 2i) + 2(5 + i)$ .

(a)  $3 - 7i$

(b)  $4 + i$

(c)  $-2 + 10i$

(d)  $-1 - 5i$

- 3) Simplify  $3f(x) - 2g(x)$  where  $f(x) = 7 - x^2$  and  $g(x) = 2x^3 + x - 1$ .

(a)  $x^3 + 4x - 5$

(b)  $-4x^3 - 3x^2 - 2x + 23$

(c)  $3x^3 + 5x^2 - 3x + 17$

(d)  $-x^3 + 19x^2 - 4$

- 4) TODO some problems based on module E.