



Evaluation of a Polynomial in One Variable

• Example 1

Given the polynomial

$$3x^3 - 2x^2 - 4x + 1$$

(a) Find the value of the polynomial when $x = 2$.

Substituting 2 for x , we have

$$\begin{aligned} & 3 \times 2^3 - 2 \times 2^2 - 4 \times 2 + 1 \\ &= 3 \times 8 - 2 \times 4 - 4 \times 2 + 1 \\ &= 24 - 8 - 8 + 1 \\ &= 9 \end{aligned}$$

(b) Find the value of the same polynomial when $x = -2$.

Now we substitute -2 for x .

$$\begin{aligned} & 3 \times (-2)^3 - 2 \times (-2)^2 - 4 \times (-2) + 1 \\ &= 3 \times (-8) - 2 \times 4 - 4 \times (-2) + 1 \\ &= -24 - 8 + 8 + 1 \\ &= -23 \end{aligned}$$

● ● ● CHECK YOURSELF 1

Find the value of the polynomial

$$4x^3 - 3x^2 + 2x - 1$$

when

a. $x = 3$

b. $x = -3$

● ● ● CHECK YOURSELF ANSWER

1. (a) 86; (b) -142 .

1.2 Exercises

Name _____

Section _____

Date _____

A N S W E R S

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

Evaluate each polynomial for the given values.

1. $6x + 1$, $x = 1$ and $x = -1$

2. $5x - 5$, $x = 2$ and $x = -2$

3. $x^3 - 2x$, $x = 2$ and $x = -2$

4. $3x^2 + 7$, $x = 3$ and $x = -3$

5. $3x^2 + 4x - 2$, $x = 4$ and $x = -4$

6. $2x^2 - 5x + 1$, $x = 2$ and $x = -2$

7. $-x^2 - 2x + 3$, $x = 1$ and $x = -3$

8. $-x^2 - 5x - 6$, $x = -3$
and $x = -2$

Evaluate $x^3 - 2x^2 + 5$ for the given values.

9. $x = 1$

10. $x = -1$

11. $x = 3$

12. $x = 0$

Evaluate $2x^2 + 3$ for the given values.

13. $x = 2$

14. $x = -3$

15. $x = -2$

16. $x = 0$