Lesson 2 Practice Problems

1. Select **all** polynomial expressions that are equivalent to $6x^4 + 4x^3 - 7x^2 + 5x + 8$.

   A. $16x^{10}$

   B. $6x^5 + 4x^4 - 7x^3 + 5x^2 + 8x$

   C. $6x^4 + 4x^3 - 7x^2 + 5x + 8$

   D. $8 + 5x + 7x^2 - 4x^3 + 6x^4$

   E. $8 + 5x - 7x^2 + 4x^3 + 6x^4$

2. Each year a certain amount of money is deposited in an account which pays an annual interest rate of r so that at the end of each year the balance in the account is multiplied by a growth factor of $x = 1 + r$. \$500 is deposited at the start of the first year, an additional \$200 is deposited at the start of the next year, and \$600 at the start of the following year.

   a. Write an expression for the value of the account at the end of three years in terms of the growth factor x.

   b. What is the amount (to the nearest cent) in the account at the end of three years if the interest rate is 2%?

3. Consider the polynomial function p given by $p(x) = 5x^3 + 8x^2 - 3x + 1$. Evaluate the function at $x = -2$.

4. An open-top box is formed by cutting squares out of a 5 inch by 7 inch piece of paper and then folding up the sides. The volume $V(x)$ in cubic inches of this type of open-top box is a function of the side length x in inches of the square cutouts and can be given by $V(x) = (7 - 2x)(5 - 2x)(x)$. Rewrite this equation by expanding the polynomial.

5. A rectangular playground space is to be fenced in using the wall of a daycare building for one side and 200 meters of fencing for the other three sides. The area $A(x)$ in square meters of the playground space is a function of the length x in meters of each of the sides perpendicular to the wall of the daycare building.

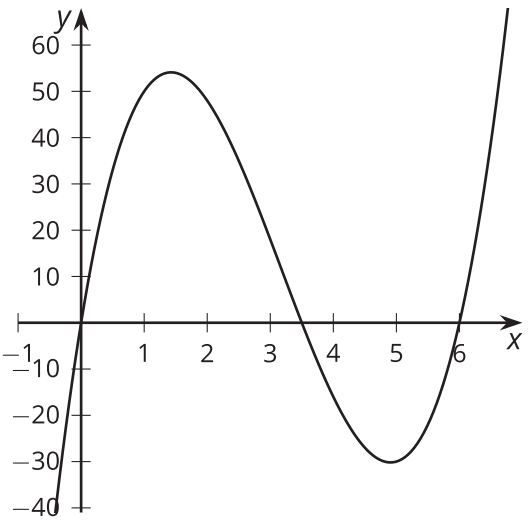
   a. What is the area of the playground when $x = 50$?

   b. Write an expression for $A(x)$.

   c. What is a reasonable domain for A in this context?

(From Unit 2, Lesson 1.)

6. Tyler finds an expression for $V(x)$ that gives the volume of an open-top box in cubic inches in terms of the length x in inches of the square cutouts used to make it. This is the graph Tyler gets if he allows x to take on any value between -1 and 7.



a. What would be a more appropriate domain for Tyler to use instead?

b. What is the approximate maximum volume for his box?

(From Unit 2, Lesson 1.)