

## Lesson 23 Practice Problems

1. Select all the identities:

A.  $(x + 2)^3 = x^3 + 8$

B.  $(x^6 + x) = (x - 1)(x^5 + x^4 + x^3 + x^2 + x)$

C.  $(x^2 - 1)(x^4 + x^2 + 1) = x^6 - 1$

D.  $(x + 1)^4 = x^4 + x^3 + x^2 + x + 1$

E.  $(x + 1)(x^4 - x^3 + x^2 - x + 1) = x^5 + 1$

F.  $(x^3 - 1)(x^3 + 1) = x^6 - 1$

2. Is  $2(x + 1)^2 = (2x + 2)^2$  an identity? Explain or show your reasoning.

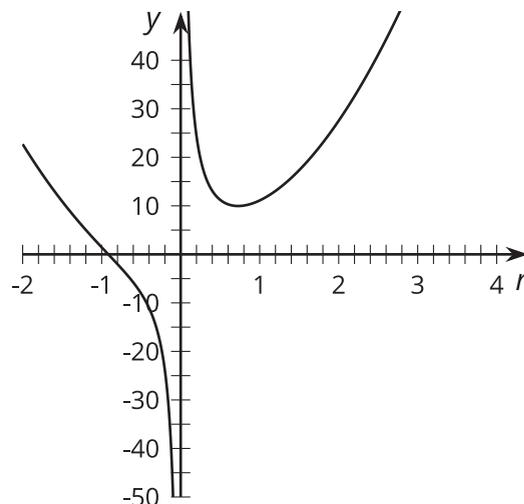
3. Mai is solving the rational equation  $5 = \frac{2+7x}{x}$  for  $x$ . What move do you think Mai would make first to solve for  $x$ ? Explain your reasoning.

4. For  $x$ -values of 0 and -2,  $(x^5 + 32) = (x + 2)^5$ . Does this mean the equation is an identity? Explain your reasoning.

5. Clare finds an expression for  $S(r)$  that gives the surface area in square inches of any cylindrical can with a specific fixed volume, in terms of its radius  $r$  in centimeters. This is the graph Clare gets if she allows  $r$  to take on any value between -1.2 and 3.

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

b. What is the approximate minimum surface area for her can?



(From Unit 2, Lesson 16.)

6. Which values of  $x$  make  $\frac{3x+1}{x} = \frac{1}{x-3}$  true?

(From Unit 2, Lesson 22.)