### Lesson 23 Practice Problems

1. Select **all** the identities:​​​​
	1. $(x+2)^{3}=x^{3}+8$
	2. $(x^{6}+x)=(x−1)(x^{5}+x^{4}+x^{3}+x^{2}+x)$
	3. $(x^{2}−1)(x^{4}+x^{2}+1)=x^{6}−1$
	4. $(x+1)^{4}=x^{4}+x^{3}+x^{2}+x+1$
	5. $(x+1)(x^{4}−x^{3}+x^{2}−x+1)=x^{5}+1$
	6. $(x^{3}−1)(x^{3}+1)=x^{6}−1$
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.
	1. What would be a more appropriate domain for Clare to use instead?
	2. What is the approximate minimum surface area for her can?
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* (From Unit 2, Lesson 16.)
1. Which values of $x$ make $\frac{3x+1}{x}=\frac{1}{x−3}$ true?
* (From Unit 2, Lesson 22.)



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