

Name: \_\_\_\_\_

### SM3 4.1: Simplifying Rationals

For problems 1-6, simplify each rational expression. State any restrictions on  $x$ .

1)  $\frac{35x}{7x}$

2)  $\frac{3x + 12}{2x + 8}$

3)  $\frac{x^2 + 7x}{x}$

4)  $\frac{18x^4 - 6x^2 + 9x}{3x}$

5)  $\frac{8 + 2x}{2x^2 + 10x + 8}$

6)  $\frac{2x^3 + 13x^2 - 7x}{x^2 + 7x}$

- 7) Show that  $\frac{x^3 - 6x^2 - 7x}{x^2 + 4x + 3}$  is equivalent to  $\frac{x^2 - 7x}{x + 3}$  for most values of  $x$ . State which values of  $x$  cause the expressions to be not equivalent.

- 8) What is the simplest rational expression that represents the depth of a pond that is  $\frac{3x^2-8x}{5x}$  meters deep?
- 9) What is the simplest rational expression that can represent the diameter of a circle that has a radius of  $\frac{4x-8}{3x-6}$  centimeters?
- 10) What are the simplest rational expressions that can be used to represent the length and width, in inches, of a rectangle with sides that are  $\frac{x^2-x-6}{x+2}$ ,  $\frac{x^2+x-20}{2x+10}$ ,  $\frac{6x^2-96}{48+12x}$ , and  $\frac{2x-6}{2}$  inches?