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Date \_\_\_\_\_  
Algebra II

### Reducing Rational Expressions

Reduce the rational expression to simplest terms (Hint: Factor then cancel)

$$1. \frac{6x^3}{9x^2}$$

$$\frac{2x^2}{3}$$

$$2. \frac{x^2 - 2x - 3}{1 - x^2} \frac{(x-3)(x+1)}{(1+x)(1-x)}$$

$$\frac{x-3}{1-x}$$

$$3. \frac{2x+6}{x^2-9} \frac{2(x+3)}{(x+3)(x-3)}$$

$$\frac{2}{x-3}$$

$$4. \frac{10-5x}{x^2+2x-8} \frac{5(2-x)(-1)}{(x+4)(x-2)}$$

$$\frac{-5}{x+4}$$

$$5. \frac{6x+18}{6x+12}$$

$$\frac{6(x+3)}{6(x+2)}$$

$$\frac{x+3}{x+2}$$

$$6. \frac{2x^2+x-6}{\sqrt{9-4x^2}}$$

$$\frac{(x+2)(2x-3)(-1)}{(3+2x)(3-2x)}$$

$$\frac{-1(x+2)}{3+2x}$$

$$2x^2+x-6$$

$$x^2+x-12$$

$$\frac{(x+4)(x-3)}{2 \quad 2}$$

$$(x+2)(2x-3)$$

$$7. \frac{x^2 + 3x + 2}{x^3 + 2x^2 + 8x + 16}$$

$$\frac{(x+2)(x+1)}{(x^2+8)(x+2)}$$

$$\frac{x+1}{x^2+8}$$

$$x^3 + 2x^2 + 8x + 16$$

$$x^2(x+2) + 8(x+2)$$

$$(x^2+8)(x+2)$$

$$8. \frac{3x^2 + 7x - 6}{4 - 9x^2}$$

$$\frac{(x+3)(3x-2)}{(2+3x)(2-3x)}$$

$$\frac{-1(x+3)}{2+3x}$$

$$3x^2 + 7x - 6$$

$$x^2 + 7x - 18$$

$$(x+9)(x-2)$$

$$(x+3)(3x-2)$$

$$9. \frac{x^3 + 8}{2x^2 - 4x + 8}$$

$$\frac{(x+2)(x^2-2x+4)}{2(x^2-2x+4)}$$

$$\frac{x+2}{2}$$

$$x^3 + 8 \quad a=x \quad b=2$$

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

$$x^3 + 8 = (x+2)(x^2 - 2x + 4)$$

$$\frac{2x^2 - 4x + 8}{2}$$

$$2(x^2 - 2x + 4)$$

$$10. \frac{2x^4 + 4x^3 - 6x^2}{4x^3 - 36x}$$

$$\frac{2x^4 + 4x^3 - 6x^2}{2x^2} = \frac{2x^2 + 4x - 6}{2}$$

$$2x^2(x^2 + 2x - 3)$$

$$2x^2(x+3)(x-1)$$

$$\frac{1 \cdot 2x^2(x+3)(x-1)}{2 \cdot 4x(x+3)(x-3)}$$

$$\frac{x(x-1)}{2(x-3)}$$

$$4x^3 - 36x$$

$$4x(x^2 - 9)$$

$$4x(x+3)(x-3)$$