

## Composition of functions:

$$(f \circ g)(x)$$

↑  
input

f outside  
g inside  
gets the  
original  
input,  
x

$$f(g(x))$$

suppose

$$f(x) = x^2 + 1$$

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

(a)

$$(f \circ g)(2)$$

$$f(g(2))$$

$$f(-2(2)+3)$$

$$f(-1)$$

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

$$2$$

(b)

$$(f \circ g)(x)$$

$$f(g(x))$$

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

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

$$4x^2 - 12x + 9 + 1$$

$$4x^2 - 12x + 10$$

## Radical Equations

2 kinds: (a)  $\sqrt{\quad}$  (radical)

(b)  $(\quad)^{m/n}$  (rational exponent)

① isolate radical

② multiply to remove radical

(a)

$$x^{m/n} \Leftrightarrow \sqrt[n]{x^m}$$

$$\Leftrightarrow (\sqrt[n]{x})^m$$

(b)  $4(3x-3)^{2/3} = 36$

$$(3x-3)^{2/3} = 9$$

$$\left[ (3x-3)^{2/3} \right]^{3/2} = 9^{3/2}$$

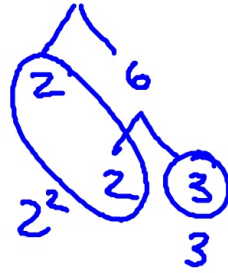
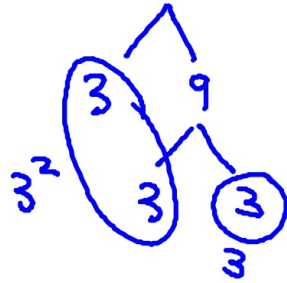
$$3x-3 = (\sqrt{9})^3$$

$$3x-3 = 27$$

$$3x = 30$$

$$x = 10$$

Simplify:  $10\sqrt{27} - 4\sqrt{12}$



$$10\sqrt{3^2 \cdot 3}$$

$$4\sqrt{2^2 \cdot 3}$$

$$10 \cdot 3\sqrt{3}$$

$$4 \cdot 2\sqrt{3}$$

$$30\sqrt{3}$$

$$- 8\sqrt{3}$$

$$22\sqrt{3}$$