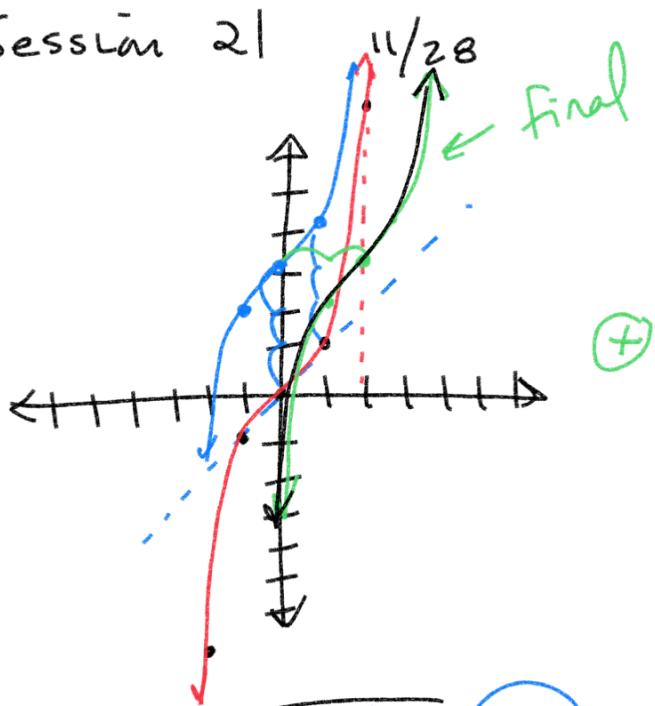


MTH-PC: College Algebra Session 21

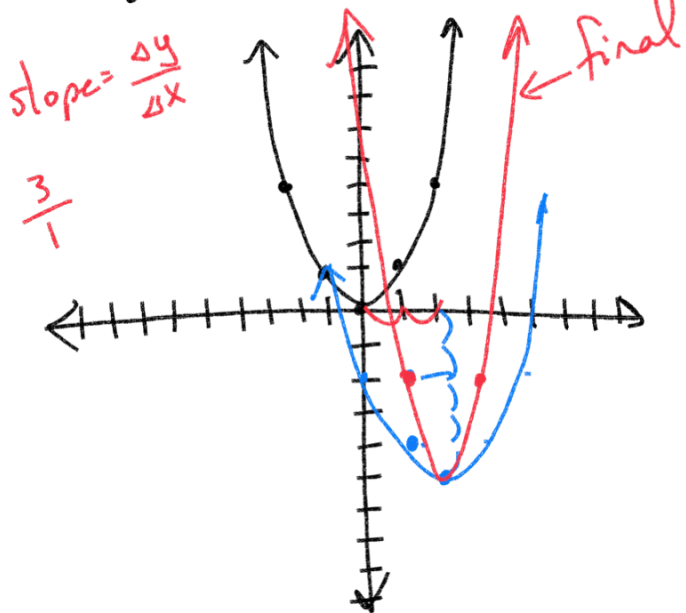
$$y = \boxed{[(x-2)^3 + 3]}$$

$y = x^3$ right 2 up 3



1.) $y = 3(x-2)^2 - 5$

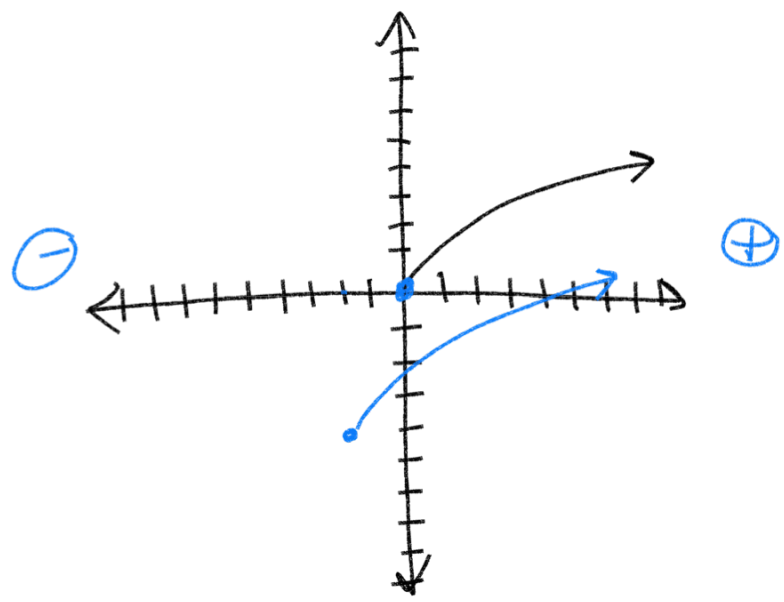
2 right down 5



$y = x^2$

2.) $y = \sqrt{x+2} - 4$

left 2 down 4



$y = \sqrt{x}$

$$f(x) = -2x - 5$$

$$g(x) = \boxed{x+4}$$

$$f(g(x))$$

$$\underline{f(g(x)) = f \circ g}$$

$$-2(x+4) - 5$$

$$-2x - 8 - 5$$

$$\boxed{-2x - 13}$$

$$g(x) = x^3 + 3$$

$$f(x) = \boxed{2x+1}$$

$$x^3 + 3$$

$$g(f(x)) = \{ (2x+1)^3 + 3$$

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

$$4x^2 + 2x + 2x + 1$$

$$(4x^2 + 4x + 1)(2x+1) + 3$$

$$8x^3 + 8x^2 + 2x + 4x^2 + 4x + 1 + 3$$

$$\boxed{8x^3 + 12x^2 + 6x + 4}$$

$$\text{Find } \left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$$

$$f(x) = 2x - 2$$

$$g(x) = x^3 - 4x^2$$

$$\boxed{\frac{2x-2}{x^3-4x^2}}$$

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

Write restriction $g(x) \neq 0$

$$x^3 - 4x^2 \neq 0$$

$$x^2(x-4) \neq 0$$

$$x^2 \neq 0 \quad x-4 \neq 0$$

$$x \neq 0 \quad x \neq 4$$

$$(f-g)(x)$$

$$f(x) = 2x - 4 \quad g(x) = x^3 + 2x$$

$$f(x) - g(x)$$

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

$$\cancel{2x} - 4 - x^3 - \cancel{2x}$$

$$\boxed{-x^3 - 4}$$

$$(f - g)(4)$$

$$f(x) = 2x - 4$$

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

$$f(4) - g(4)$$

$$2(4) - 4 - [(4)^3 + 2(4)]$$

$$8 - 4 - [64 + 8]$$

$$8 - 4 - [72]$$

$$4 - 72 = \boxed{-68}$$

$$(f - g)(x) =$$

$$-x^3 - 4$$

4 →

$$-(4)^3 - 4$$

$$-64 - 4 = \boxed{-68}$$

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

$$(f \cdot g)(x) \longrightarrow f(x) * g(x)$$