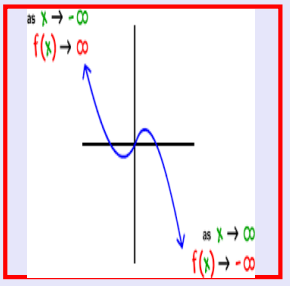
Math 245

Spring 2022

Lecture 18



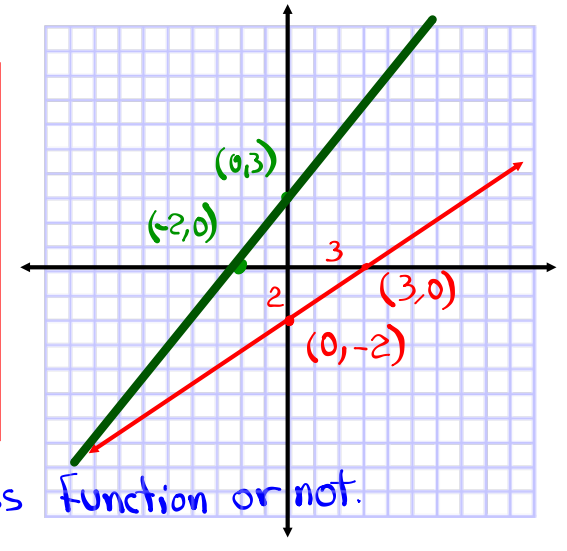
$f(x) = \frac{2}{3}x - 2$

1) Y-Int $(0,-2)$

2) Slope $m = \frac{2}{3}$

3) Draw

4) use V.L.T. to discuss function or not.



$5x + 3y = 6$

1) write in Slope-Int form.

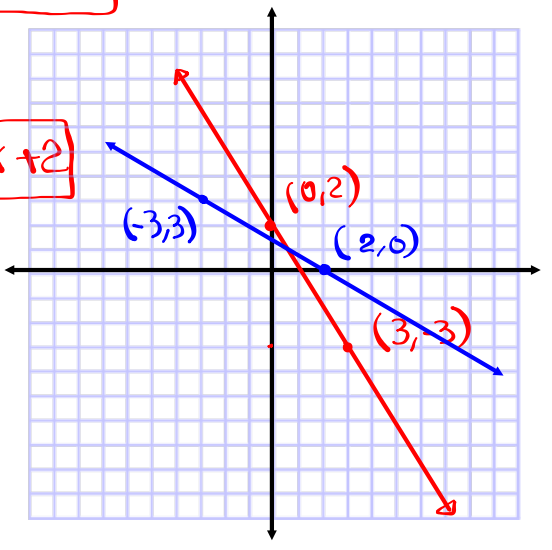
$3y = -5x + 6$ $\quad y = \frac{-5}{3}x + 2$

2) write using function notation. $\quad f(x) = \frac{-5}{3}x + 2$

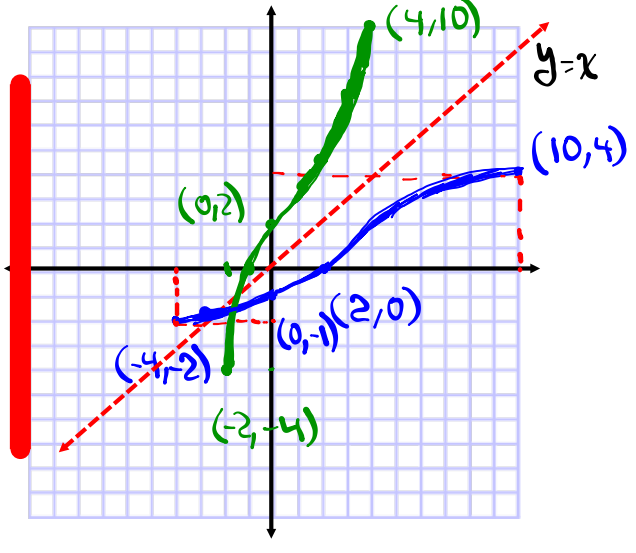
3) Y-Int $(0,2)$

4) Slope $m = \frac{-5}{3}$

5) Draw



Consider the graph below:



1) Function or not. Explain By V.L.T.

2) Domain $[-4,10]$

3) Range $[-2,4]$

4) All intercepts

X-Int $(2,0)$

Y-Int $(0,-1)$

$f(x) = 3x + 5$ $\quad$ $g(x) = 2x - 3$

1) Find $(f \cdot g)(x) = f(x) \cdot g(x)$

Multiplication $= (3x+5)(2x-3)$

$=$ Foil & Simplify

$= \boxed{6x^2 + x - 15}$

2) Find $(f \circ g)(x) = f(g(x))$

Composition $= 3\,g(x) + 5$

$= 3(2x-3) + 5 = \boxed{6x - 4}$

Dist. & Simplify

Perform the following operation on $f(x) = 2x + 5$.

1) Replace $f(x)$ with y. $\quad y = 2x + 5$

2) Switch x & y. $\quad x = 2y + 5$

3) Solve for y. "Isolate y". $\quad x - 5 = 2y$, $\quad \frac{x-5}{2} = y$

4) Replace y with $f^{-1}(x)$. $\quad \boxed{f^{-1}(x) = \frac{x-5}{2}}$

Not exponent

Perform the following on $f(x)=\frac{1}{2}x-3$.

1) Replace $f(x)$ with y. $y=\frac{1}{2}x-3$

2) Switch x & y. $x=\frac{1}{2}y-3$

3) Solve for y. "Isolate y"

$x+3=\frac{1}{2}y$

$2x+2\cdot 3=2\cdot\frac{1}{2}y$

$2x+6=y$

4) Replace y with $f^{-1}(x)$. $f^{-1}(x)=2x+6$

Given $f(x)=\sqrt{x-2}$

1) Replace $f(x)$ with y. $y=\sqrt{x-2}$

2) Switch x & y. $x=\sqrt{y-2}$

Square both sides

3) Solve for y. $x^2=(\sqrt{y-2})^2$

$x^2=y-2$

$x^2+2=y$

4) Replace y with $f^{-1}(x)$. $f^{-1}(x)=x^2+2$

Factor Completely:

1) $4x - 20 = \boxed{4(x-5)}$

2) $4x^2 - 25 = (2x)^2 - (5)^2 = \boxed{(2x+5)(2x-5)}$
$A^2 - B^2$

3) $8x^3 + 27 = (2x)^3 + 3^3 = (2x+3)(4x^2 - 6x + 9)$
$A^3 + B^3$

4) $27x^3 - 125 = (3x)^3 - (5)^3 = (3x-5)(9x^2 + 15x + 25)$
$A^3 - B^3$