Warm-up: *after* **Composition of functions**

SHOW YOUR WORK *as demonstrated in class notes*

Simplify

1. $15 \cdot \left(\dfrac{2}{3} \right)$

2. $\left(\dfrac{1}{4} \right) 12$

3. $\dfrac{10}{21} \cdot \dfrac{14}{5}$

4. If $f(x) = x - 7$ and $h(x) = 2x^2 + 4$, find:

a) $f(5) =$

b) $h(-3) =$

5. If $f(x) = 5x + 3$ and $h(x) = x^2 + 1$, find:

a) $f(h(x)) =$

b) $h(f(x)) =$

c) $f(f(x)) =$

d) $f(h(2)) =$

e) $h(f(2)) =$

Warm-up: *after* **Composition of functions**

SHOW YOUR WORK *as demonstrated in class notes*

Simplify

1. $\dfrac{5}{15}\left(\dfrac{2}{3}\right) = \boxed{10}$

2. $\left(\dfrac{1}{x}\right)x^2 \cdot 3 = \boxed{3}$

3. $\dfrac{10}{21} \cdot \dfrac{14}{5} = \boxed{\dfrac{4}{3}}$

4. If $f(x)=x-7$ and $h(x)=2x^2+4$, find:

a) $f(5)= (5)-7$

$\quad = -2$

b) $h(-3)= 2(-3)^2+4$

$\quad =2\cdot 9+4$

$\quad =18+4$

$\quad =22$

5. If $f(x)=5x+3$ and $h(x)=x^2+1$, find:

a) $f(h(x))= 5(x^2+1)+3$

$\quad =5x^2+5+3$

$\quad =5x^2+8$

b) $h(f(x))=(5x+3)^2+1$

$\quad =(5x+3)(5x+3)+1$

$\quad = 25x^2+15x+15x+9+1$

$\quad = 25x^2+30x+10$

c) $f(f(x))=5(5(x)+3)+3$

$\quad =25x+15+3$

$\quad =25x+18$

d) $f(h(2))= 5((2)^2+1)+3$

$\quad =5(4+1)+3$

$\quad =5(5)+3$

$\quad =25+3$

$\quad =28$

e) $h(f(2))=(5(2)+3)^2+1$

$\quad =(10+3)^2+1$

$\quad =(13)^2+1$

$\quad =169+1$

$\quad =170$

Answers on homework problems

⑦ $f(x) = |x| - 1$

$m = \frac{1}{1}$
$b = -1$

x	y
2	1
1	0
0	-1
-1	0
-2	1
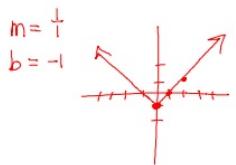
⑱ $f(g(x)) = ((x)-1)^2$ $f(x) = x^2$
                              $g(x) = x - 1$

㉜ $f \cdot g = f(g(x))$ $f(x) = -x$

$(f \circ g)(-3) = f(g(-3))$ $g(x) = 7x$

$= -(7(-3))$
$= -(-21)$
$= 21$

㉙ $f(x) = |x|$ $g(x) = 2x$

$f(g(-5)) = |2(-5)|$

$= |-10|$

$= 10$

$|2(5) - 25| = |10 - 25|$

$= |-15|$

$\cancel{|2(5) + 25|}$ $= 15$