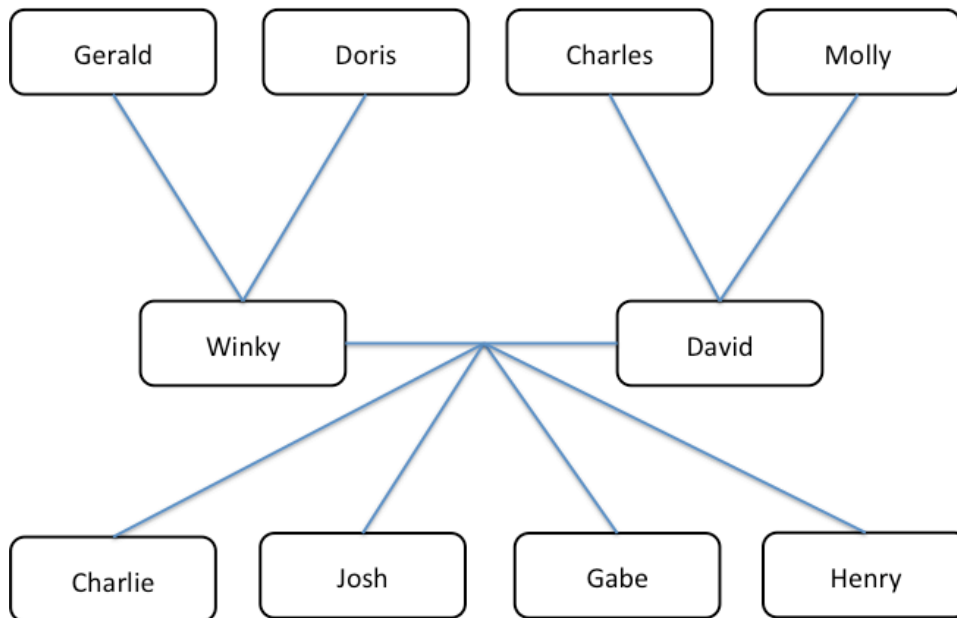


HOMEWORK: ASST 4.2 FROM TEXT

Ms Winkler's Family Tree



1. Given that $f(x)$ = father of x and $m(x)$ = mother of x , find:

- $f(f(\text{Josh}))$
- $f(m(\text{Gabe}))$
- $m(f(\text{Charlie}))$
- Does $m(f(\text{Henry})) = f(m(\text{Henry}))$?

2. $f(x) = x^2$ and $g(x) = \frac{1}{3x+1}$.

- Evaluate $f(g(4))$.
- Evaluate $g(f(4))$.
- Evaluate $f(g(f(4)))$.
- Find a formula for $f(g(x))$.
- What is the domain for $f(g(x))$

3. Given the functions, $f(x) = \sqrt{x-1}$ and $g(x) = \frac{1}{x^2-9}$, determine $(g \circ f)(x)$.

4. Find functions f , g and h such that $f(g(h(x))) = \frac{1}{(x-2)^2}$.

5. Consider the functions $f(x) = \frac{1}{x}$ and $g(x) = \frac{x}{x-4}$.

a) Find the domain of $f(x)$.

b) Find the domain of $g(x)$.

c) Simplify each of the following functions and find their domains:

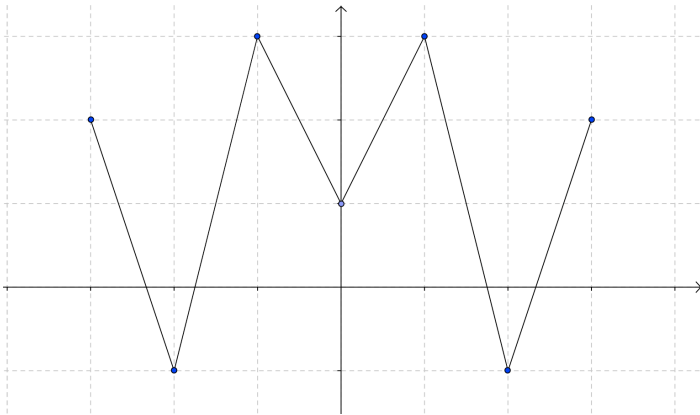
i. $f(f(x))$

ii. $f(g(x))$

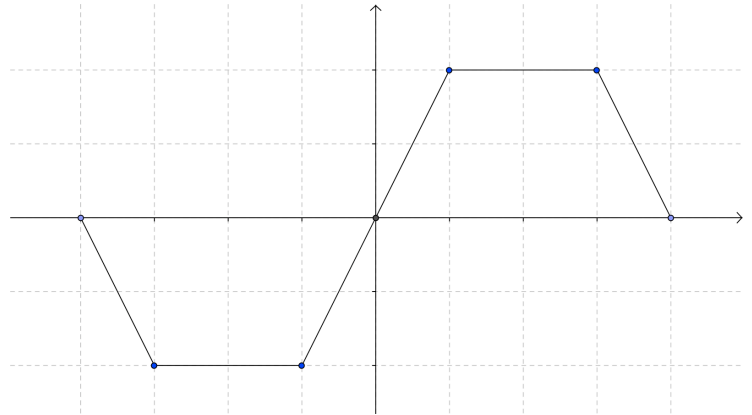
iii. $g(f(x))$

6. Use the graphs of f and g to evaluate the functions.

$f(x)$



$g(x)$



a) $(f \circ g)(3)$

b) $(g \circ f)(1)$

c) $f(g(0))$

Answers:

1a) Charles b) Gerald c) Molly d) No

2a) $1/169$ b) $1/49$ c) $1/2401$ d) $\left(\frac{1}{3x+1}\right)^2$ e) x not equal to $-1/3$

3. $1/(x-10)$

4. $h(x) = x - 2$, $g(x) = x^2$, $f(x) = 1/x$

5a) x can't be zero, b) x can't be 4

c) i) x , x can't be zero, ii) $(x-4)/x$, x can't be 4 or 0, iii) $(1/x)/(1/x - 4)$, x can't be 0 or $1/4$

6a) -1 b) 2 c) 1

