

Session 1 Worksheet Answer Key

(Composition of Functions and Domain & Range)

Composition of Functions

$$F(x)=x+1, G(x)=x-5$$

1. $F(g(x))$

$$G(x)+1 \rightarrow (x-5)+1 \rightarrow x-5+1 \rightarrow x-4$$

2. $G(f(x))$

$$F(x)-5 \rightarrow (x+1)-5 \rightarrow x+1-5 \rightarrow x-4$$

3. $F(g(x))+f(x)$

$$(G(x)+F(x))+1 \rightarrow (x-5+x+1)+1 \rightarrow (2x-4)+1 \rightarrow 2x-4+1 \rightarrow 2x-3$$

$$H(x)=x^3, G(x)=2x$$

1. $H(x)+G(x)$

$$x^3+2x$$

2. $G(H(x))$

$$2(H(x)) \rightarrow 2x^3$$

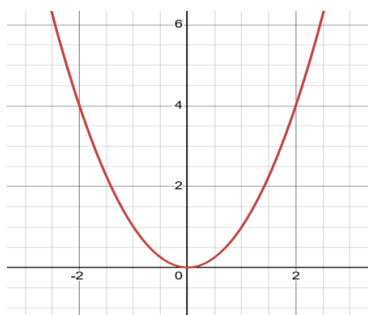
3. $H(G(x)H(x))$

$$(G(x)H(x))^3 \rightarrow ((2x)(x^3))^3 \rightarrow (2x^4)^3 \rightarrow 8x^{12}$$

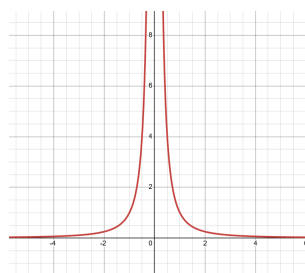
Domain & Range

What do these graphs look like?

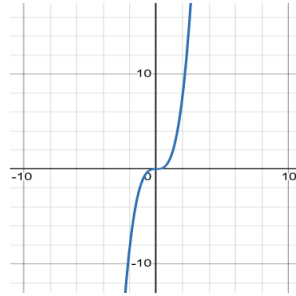
$$F(x)=x^2$$



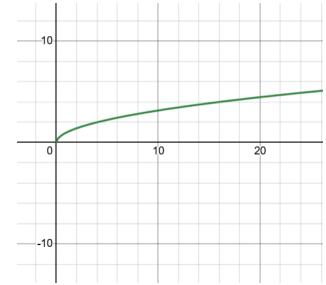
$$F(x)=\frac{1}{x^2}$$



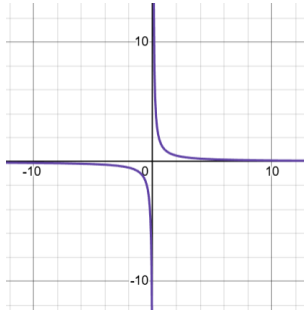
$$F(x)=x^3$$



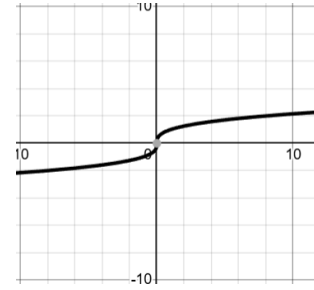
$$F(x)=\sqrt{x}$$



$$F(x)=\frac{1}{x}$$



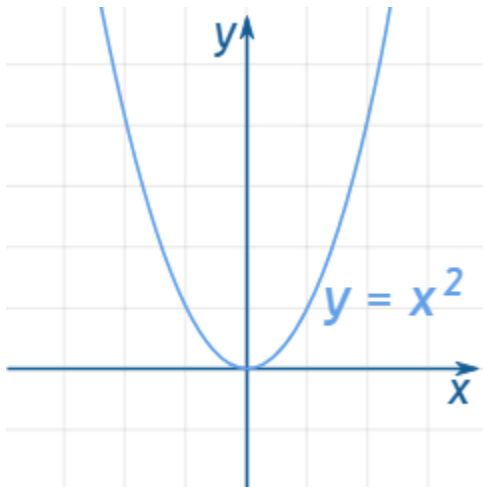
$$F(x)=\sqrt[3]{x}$$



Find the Domain & Range

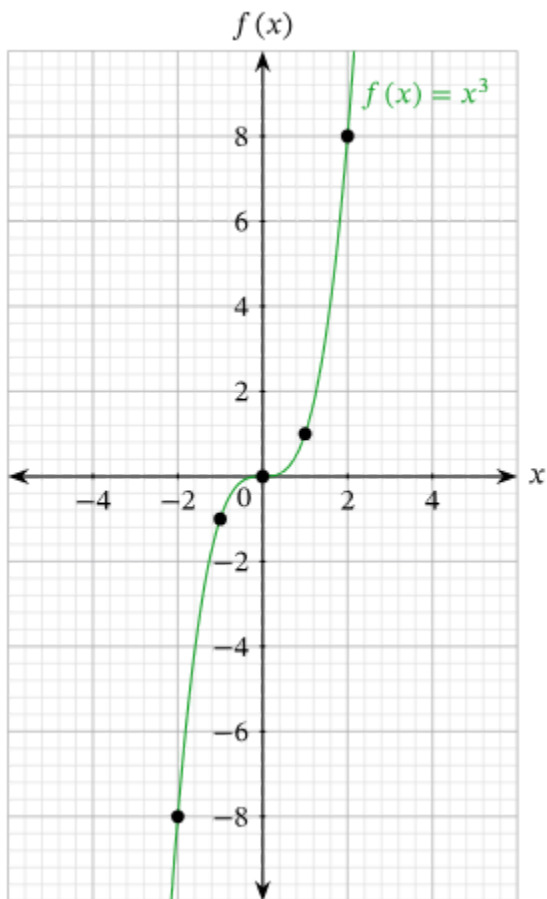
$$F(x)=x^2$$

Domain: $(-\infty, \infty)$, Range: $[0, \infty)$



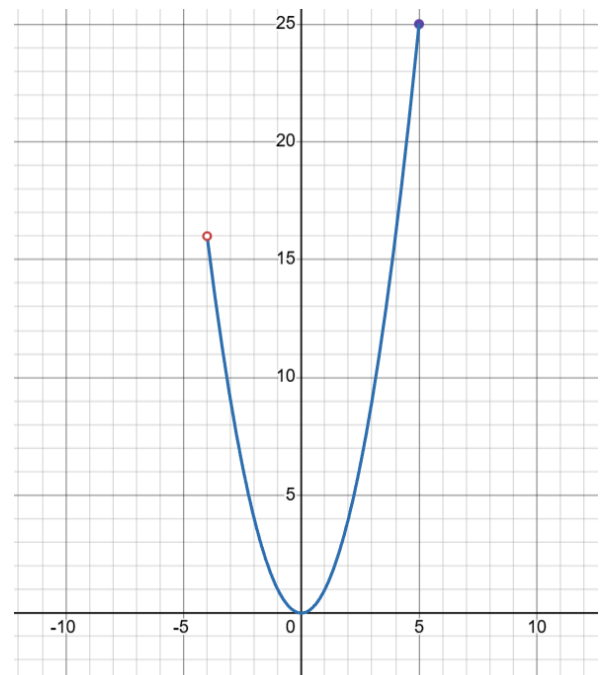
$$F(x)=x^3$$

Domain: $[-\infty, \infty]$, Range: $[-\infty, \infty]$



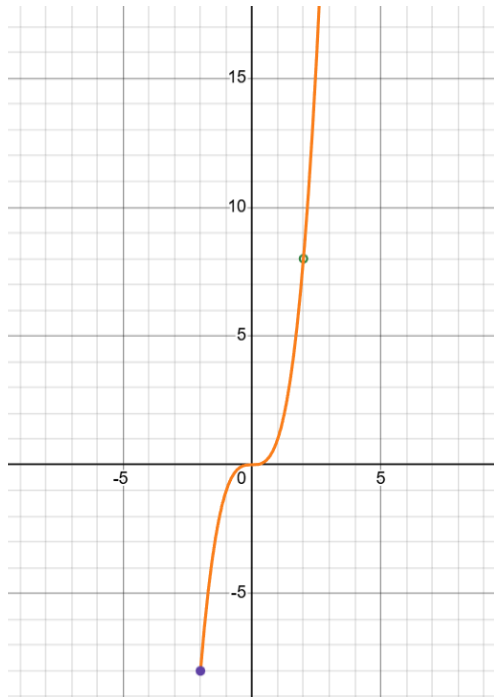
$$F(x)=x^2$$

Domain: $[-4, 5]$, Range: $[0, 25]$



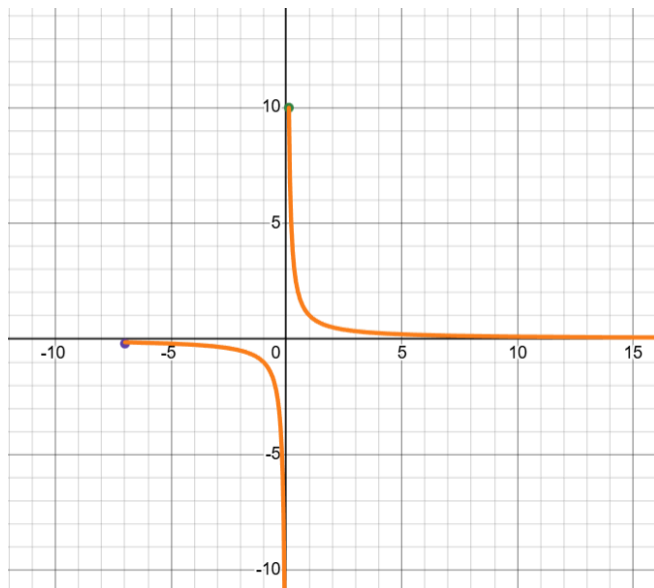
$$F(x)=x^3$$

Domain: $[-2, \infty)$, Range: $[-8, \infty)$



$$F(x)=\frac{1}{x}$$

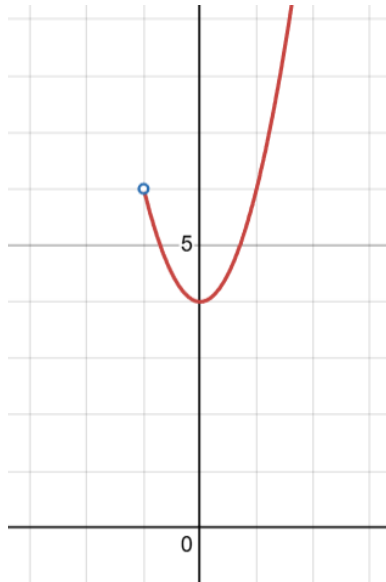
Domain: $[-7, \infty)$, Range: $(-\infty, 10]$



Create the graph for the equation and Domain & Range

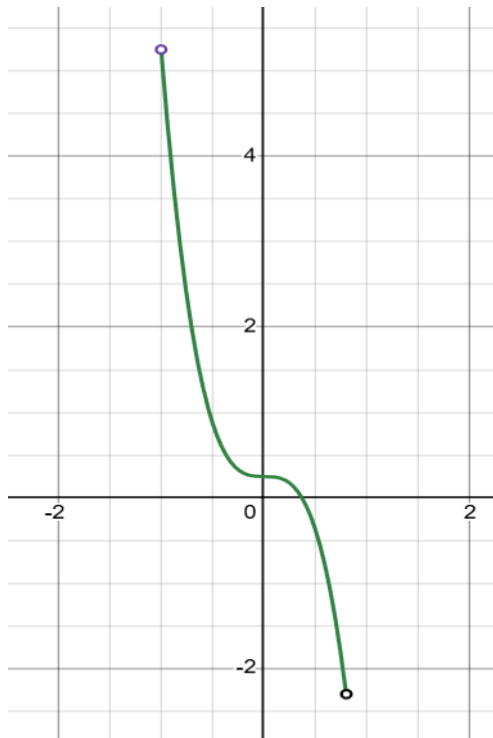
$$F(x) = 4 + 2x^2$$

Domain: $(-1, \infty]$, Range: $[4, \infty]$



$$F(x) = \frac{1}{4} - 5x^3$$

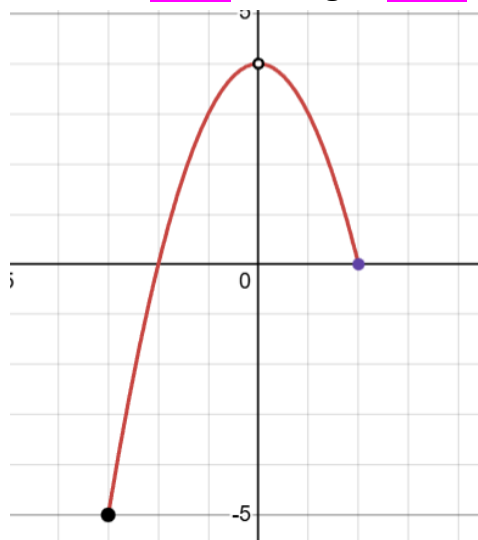
Domain: $(-1, 0.8)$, Range: $(-5.25, -2.3)$



Create the Equation for the Graph

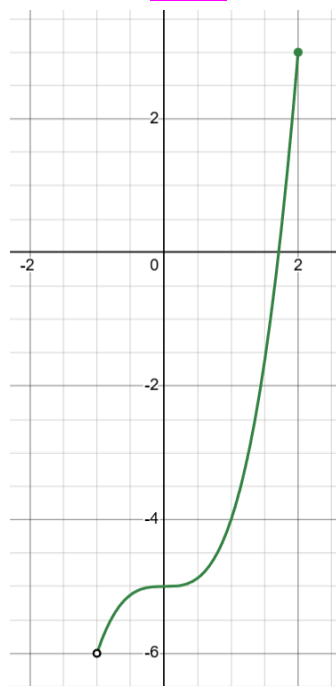
$$F(x) = 4 - x^2$$

Domain: $[-3, 2]$, Range: $[-5, 4]$



$$F(x) = -5 + x$$

Domain: $[-1, 2]$, Range: $[-6, 3]$



Inverse Functions and Graphs

1) $F(x) = \sqrt{x + 1}$

x= 0	x=2	x=4	x=5	x=8
y= 1	y= $\sqrt{3}$	y= $\sqrt{5}$	y= $\sqrt{6}$	y=3

$F^{-1}(x) = x^2 - 1$

x= 1	x= $\sqrt{3}$	x= $\sqrt{5}$	x= $\sqrt{6}$	x=3
y=0	y=2	y=4	y=5	y=8

2) $F^{-1}(x) = x^3 + 2$

x= 2	x=3	x=5	x=6	x=9
y= 10	y= 29	y= 127	y= 218	y=731

$F^{-1}(x) = \sqrt[3]{x} - 2$

x= 10	x= 29	x= 127	x= 218	x= 731
y= 2	y=3	y=5	y=6	y=9