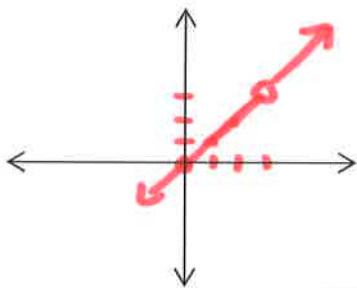


Fill in the missing information for the following functions.

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

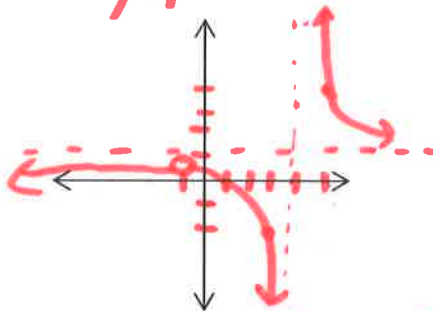
Hole: (3, 3)  
 VA: -  
 HA: -



Domain: (-∞, 3) ∪ (3, ∞)  
 Range: (-∞, 3) ∪ (3, ∞)

2)  $f(x) = \frac{x^2 - 1}{x^2 - 3x - 4}$   
 $\frac{(x-1)(x+1)}{(x-4)(x+1)} = \frac{x-1}{x-4}$

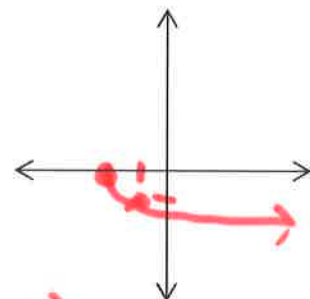
Hole: (-1, 2/5)  
 VA: x = 4  
 HA: y = 1



Domain: (-∞, -1) ∪ (-1, 4) ∪ (4, ∞)  
 Range: (-∞, 2/5) ∪ (2/5, 1) ∪ (1, ∞)

3)  $g(x) = -\sqrt{x+2}$

Transformations: Ref. x-axis  
L2

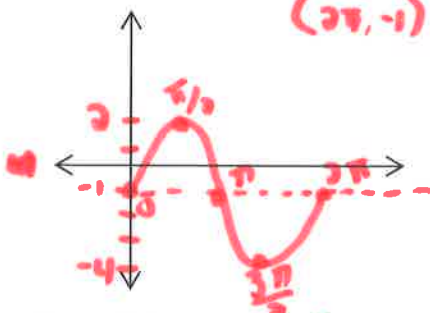


Domain: [-2, ∞)  
 Range: (-∞, 0]

4)  $f(x) = 3\sin(x) - 1$

Transformations: D1

Amp: 3  
 Period: 2π  
 Key Points: (0, -1) (π/2, 2) (π, 1) (3π/2, -4) (2π, -1)

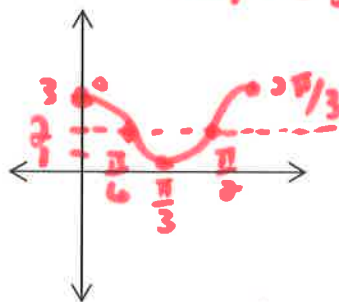


Domain: (-∞, ∞)  
 Range: [-4, 2]

5)  $g(x) = \cos(3x) + 2$

Transformations: U2

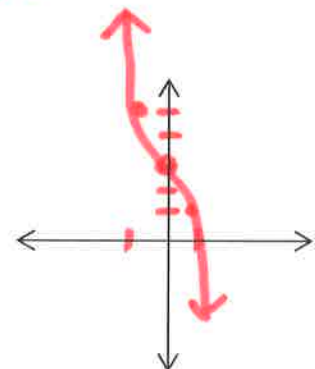
Amp: 1  
 Period: 2π/3  
 Key Points: (0, 3) (π/3, 2) (2π/3, 1) (π, 2) (4π/3, 3)



Domain: (-∞, ∞)  
 Range: [1, 3]

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

Transformations: Ref. x-axis  
Ver. stretch  
U3



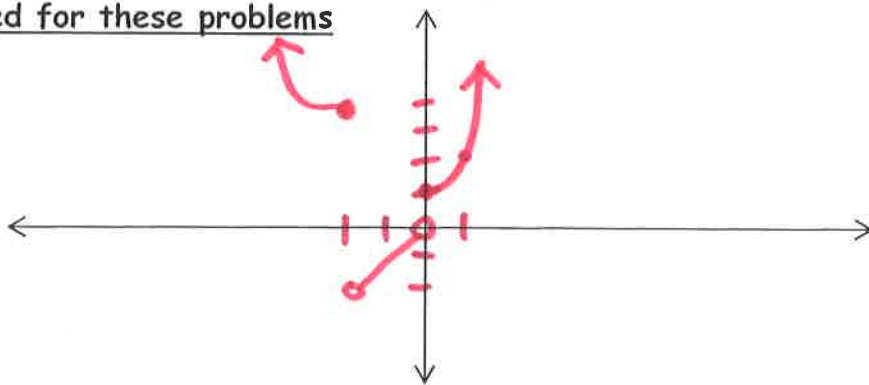
Domain: (-∞, ∞)  
 Range: (-∞, ∞)

Plot the graphs of the given piecewise functions and calculate the requested function values.  
Graphing calculators may not be used for these problems

$$7) h(x) = \begin{cases} x^2 & \text{if } x \leq -2 \\ x & \text{if } -2 < x < 0 \\ 1+x^3 & \text{if } x \geq 0 \end{cases}$$

$$h(0) = 1 \quad h(1) = 2$$

$$h(-5) = 25 \quad h(-0.5) = -0.5$$

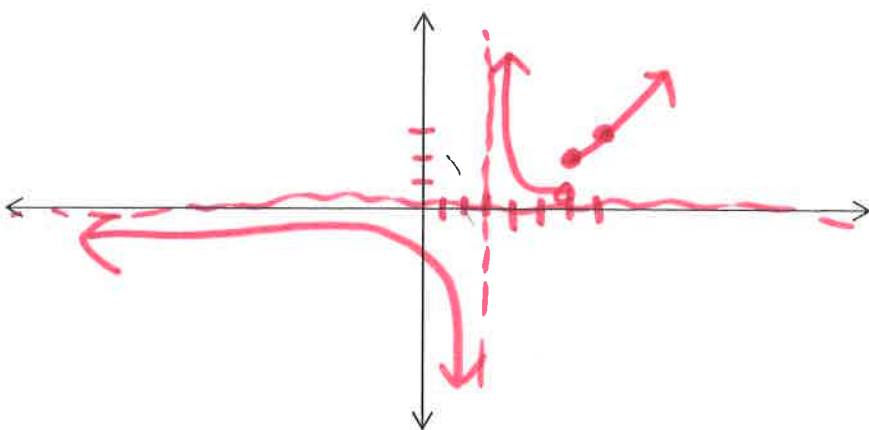


$$8) g(x) = \begin{cases} \frac{1}{x-3} & \text{if } x < 6 \\ x-4 & \text{if } x \geq 6 \end{cases}$$

$$g(0) = -\frac{1}{3} \quad g(6) = 2$$

$$g(-2) = -\frac{1}{5} \quad g(7.5) = 3.5$$

$$g(3) = 0 \quad g(4) = 1$$

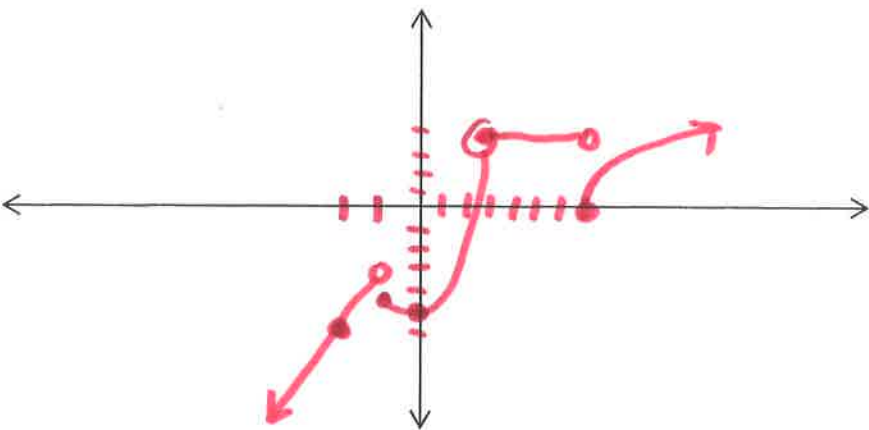


$$9) f(x) = \begin{cases} 3x & \text{if } x < -1 \\ x^2 - 5 & \text{if } -1 \leq x < 3 \\ 4 & \text{if } 3 \leq x < 7 \\ \sqrt{x-7} & \text{if } x \geq 7 \end{cases}$$

$$f(0) = -5 \quad f(6) = 4$$

$$f(-2) = -6 \quad f(7.5) = \sqrt{0.5}$$

$$f(3) = 4 \quad f(7) = 0$$



$\sqrt{\frac{1}{2}}$