

Semester 1 - ESQ 3

1) Find the domain of the function.  $h(x) = -8\sqrt{x+6} - 7$

$$x+6 \geq 0$$

$$\begin{array}{r} -6 \quad -6 \\ \hline x \geq -6 \end{array}$$

2) Graph the function and complete the table for 3 points with integer outputs.

$$g(x) = -4\sqrt{x+2} + 0$$

$x$	$-2$	$-1$	$2$
$g(x)$	$0$	$-4$	$-8$

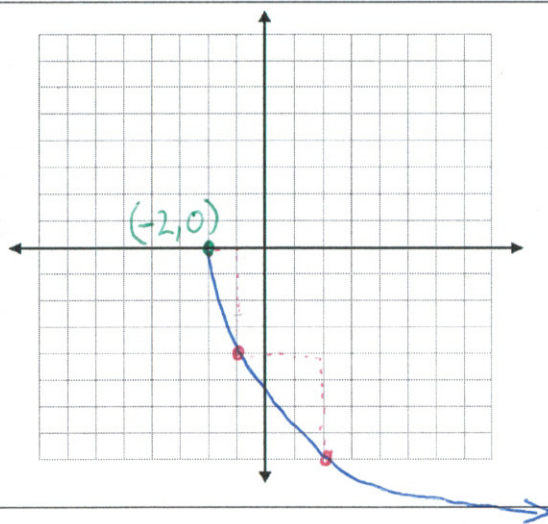
$h+1$     $+3$   
 $k-4$     $-4$

$$x+2 \geq 0$$

$$\begin{array}{r} -2 \quad -2 \\ \hline x \geq -2 \end{array}$$

$$(h,k) = (-2, 0)$$

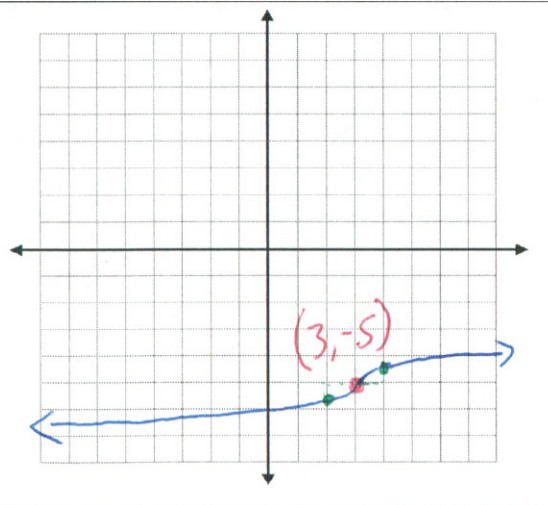
$$g(-1) = -4\sqrt{-1+2} = -4(1) = -4$$



3) Sketch the function using 3 key points.

$$f(x) = \frac{1}{2}\sqrt[3]{x-3} - 5$$

$$(h,k) = (3, -5)$$



Semester 1 - ESQ 4

Solve each equation for x, where x is a real number.

$$\sqrt{x+9} + 3 = 7$$

$$\begin{array}{r} -3 \quad -3 \\ \hline \sqrt{x+9} = 4 \end{array}$$

$$(\sqrt{x+9})^2 = (4)^2$$

$$x+9 = 16$$

$$\begin{array}{r} -9 \quad -9 \\ \hline x = 7 \end{array}$$

Check

$$\sqrt{7+9} + 3 = 7$$

$$\sqrt{16} + 3 = 7$$

$$4 + 3 = 7$$

✓

$$(5x+2)^{1/3} - 1 = 3$$

$$\begin{array}{r} +1 \quad +1 \\ \hline (5x+2)^{1/3} = 4 \end{array}$$

$$\left((5x+2)^{1/3}\right)^3 = (4)^3$$

$$5x+2 = 64$$

$$\begin{array}{r} -2 \quad -2 \\ \hline 5x = 62 \\ \hline x = \frac{62}{5} \end{array}$$

Check

$$\sqrt[3]{5\left(\frac{62}{5}\right) + 2} - 1 = 3$$

$$\sqrt[3]{62+2} - 1 = 3$$

$$\sqrt[3]{64} - 1 = 3$$

$$4 - 1 = 3$$

✓

$$\sqrt[4]{x-6} - \sqrt[4]{3x+2} = 0$$

$$\begin{array}{r} +\sqrt[4]{3x+2} \quad +\sqrt[4]{3x+2} \\ \hline \sqrt[4]{x-6} = \sqrt[4]{3x+2} \end{array}$$

$$\left(\sqrt[4]{x-6}\right)^4 = \left(\sqrt[4]{3x+2}\right)^4$$

$$x-6 = 3x+2$$

$$\begin{array}{r} -3x \quad -3x \\ \hline -2x - 6 = 2 \\ \hline +6 \quad +6 \\ \hline -2x = 8 \\ \hline \frac{-2x}{-2} = \frac{8}{-2} \\ \hline x = -4 \end{array}$$

Check

$$\sqrt[4]{-4-6} - \sqrt[4]{3(-4)+2} = 0$$

$$\sqrt[4]{-10} - \sqrt[4]{-12+2} = 0$$

$$\sqrt[4]{-10} - \sqrt[4]{-10} = 0$$

You cannot  $\sqrt[4]{}$  a negative number

**No Solution**