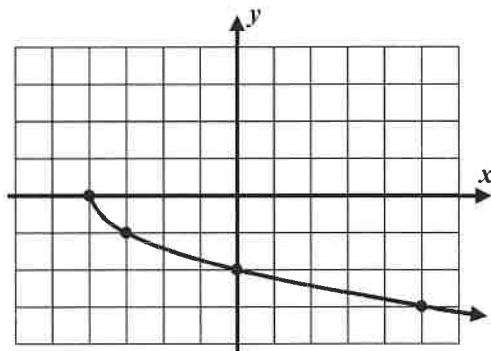1.) Which of the following equations represent the graph shown below?

(1) $y = -\sqrt{x} + 4$

(2) $y = 4 - \sqrt{x}$

(3) $y = \sqrt{x} - 4$

(4) $y = -\sqrt{x} - 4$

2.) Determine the domain for each of the following square root functions. Show an inequality that justifies your work.

(a) $y = \sqrt{x + 2}$

$X + 2 \geq 0$

$X \geq -2$

(b) $y = \sqrt{3x - 2}$

$3x - 2 \geq 0$

$3x \geq 2$

$X \geq ^2/_3$

(c) $y = \sqrt{8 - 2x}$

$8 - 2x \geq 0$ ⊛ Flip

$\dfrac{-2x \geq -8}{-2 \quad -2}$ the Sign!

$X \leq 4$

3.) Which of the following represents the domain and range of $y = \sqrt{x - 5} + 7$? Solve this either by considering the shifting that has occurred to $y = \sqrt{x}$ or by producing a graph on your calculator.

(1) Domain: $[-5, \infty)$ (3) Domain: $(-7, \infty)$ Right 5   up 7
   Range: $[7, \infty)$ Range: $(5, \infty)$
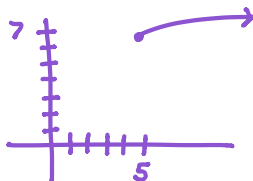
(2) Domain: $[5, \infty)$ (4) Domain: $[7, \infty)$
   Range: $[7, \infty)$ Range: $[5, \infty)$

4.) Which of the following values of x is *not* in the domain of $y = \sqrt{1 - 3x}$?

(1) $x = \dfrac{1}{3}$ (3) $x = 0$

(2) $x = -1$ (4) $x = 4$

$1 - 3x \geq 0$
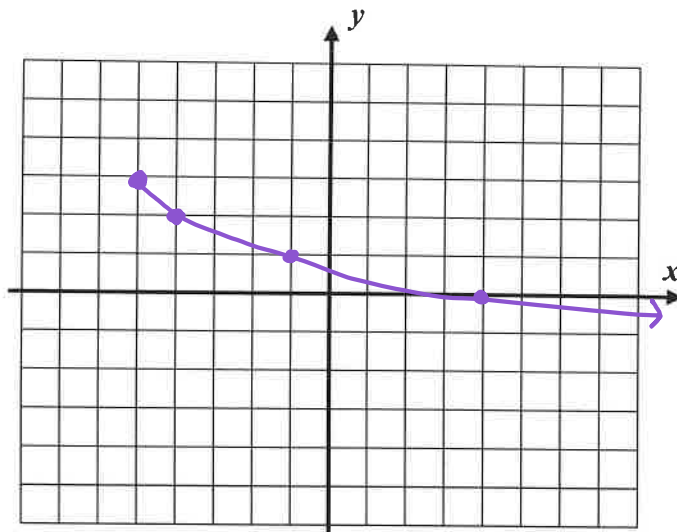
$-3x \geq -1$

$X \leq \dfrac{1}{3}$

5.) Consider the function $g(x) = -\sqrt{x+5} + 3$.

(a) Graph the function $y = g(x)$ on the grid shown.

(b) Describe the transformations that have occurred to the graph of $y = \sqrt{x}$ to produce the graph of $y = g(x)$. Specify both the transformations and their order.

— Reflection over the X-axis
- Shift left 5 units
- Shift up 3 units

6.) Which of the following equations represents an identity?

(1) $(x+4)^2 = x^2 + 16$ $(x+4)(x+4)$
$x^2 + 4x + 4x + 16$
$x^2 + 8x + 16$

(3) $x^2 - 9 = x(x-3) + 3(x-3)$
$x^2 - 3x + 3x - 9$
$x^2 - 9$ ✓

(2) $5(2x+1) = 10x + 6$
$10x + 5$

(4) $(x-4)^2 = (x+2)(x-2)$
$(x-4)(x-4)$ $x^2 - 2x + 2x - 4$
$x^2 - 4x - 4x + 16$ $x^2 - 4$
$x^2 - 8x + 16$

7.) Which of the following is a factor of the cubic polynomial $x^3 - 10x^2 + 11x + 70$?

(1) $x + 10$ X = 10   R = 180

(3) $x - 7$ X = 7   R = 0

It is a factor if the remainder is zero

(2) $x - 2$ X = 2   R = 60

(4) $x + 5$ X = -5   R = -360

→ Symmetric w/ respect to the y-axis

8.) Which of the following is an even function?

(1) $f(x) = 3x^4 - 5x$

(2) $f(x) = 4x^3 + 4x$

(3) $f(x) = x^6 - 2$

(4) $f(x) = 10x - 4$