LG 4 Ver B

Name: _____ Student #:_____

Date:_____ T.A. #:_____

Mathematics 12 Pre-Calculus
LEARNING GUIDE 4 TEST – RADICAL FUNCTIONS

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***Full marks will NOT be given for the final answer only.**

When using a calculator, you should provide a decimal answer that is correct **to at least two decimal places** (unless otherwise indicated). Such rounding should occur **only** in the final step of the solution.

1. What transformations need to be made to the function $y = \sqrt{x}$ to obtain the graph of the function $y = -3\sqrt{2(x-1)}$? (2 marks)

REFLECT IN x

VE BASE 3

HC BASE $\frac{1}{2}$

RIGHT 1

2. Determine the equation of each radical function, which has been transformed from $f(x) = \sqrt{x}$ by a reflection in the x axis, a vertical compression by a factor of $\frac{1}{3}$, moved left 1 and down 2. (2 marks)

$y = -\frac{1}{3}\sqrt{x+1} - 2$

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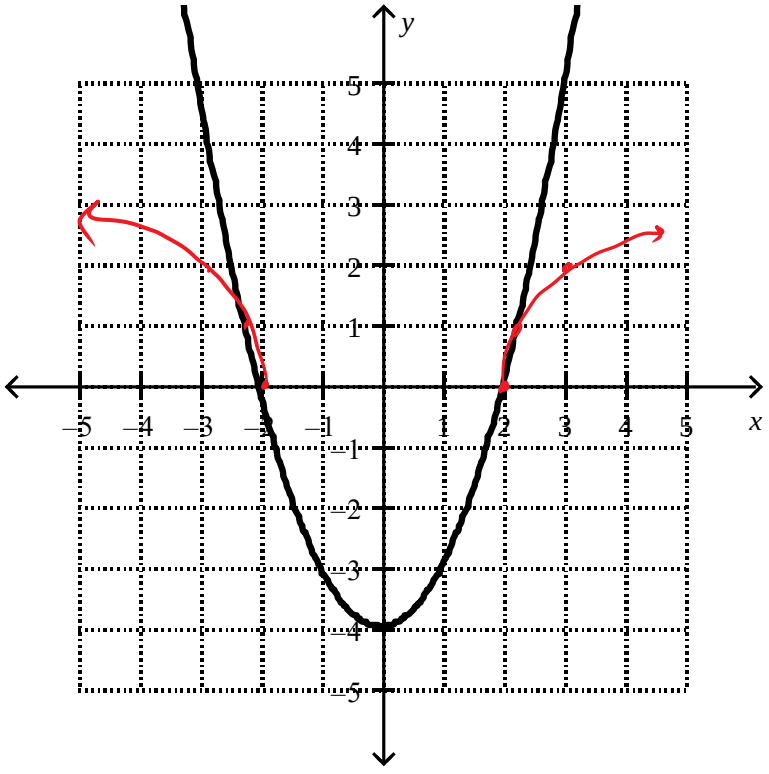
3. Determine the domain and range of the following function: (2 marks)

$f(x) = -\frac{1}{5}\sqrt{3(x+1)}$

D: $x \geq -1$

R: $y \leq 0$

4. Using each graph of $y = f(x)$, sketch the graph of $y = \sqrt{f(x)}$. (2 marks)



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5. Given the function $f(x) = 8 - x^2$, identify the differences in the domains and ranges of $y = f(x)$ and $y = \sqrt{f(x)}$. (2 marks)

$y = f(x)$

D: $x \in R$

R: $y \leq 8$

$y = \sqrt{f(x)}$

D: $-2\sqrt{2} \leq x \leq 2\sqrt{2}$

R: $0 \leq y \leq 2\sqrt{2}$

6. Solve the equation $-2\sqrt{8-x} = 4$ algebraically. (2 marks)

$\sqrt{8-x} = -2$

$8 - x = 4$

$-x = -4$

$x = 4$

NO SOLUTION

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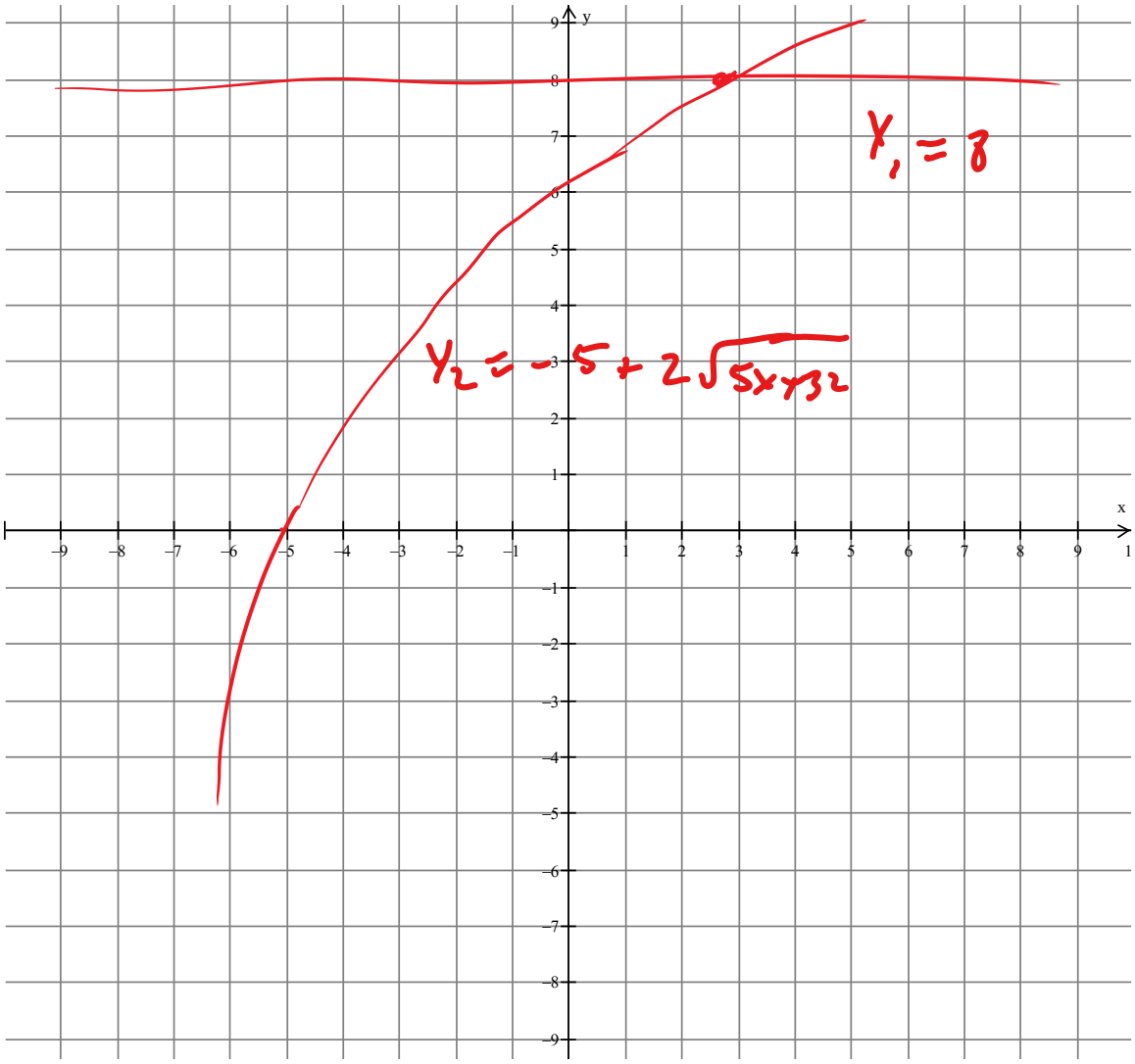
7. Solve the equation $-5 + 2\sqrt{5x + 32} = 8$ graphically. (2 marks)



THE SOLUTION WILL BE THE x COORDINATE OF THE INTERSECTION POINT.

$X = 2.05$

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8. The manufacturer of a new Global Positioning Satellite (GPS) system wants to predict the consumer interest in its new device. The company uses the function $I(w) = -3\sqrt{w-1} + 15$ to model the number, *I*, in thousands, of pre-orders for the GPS as a function of the number, *w*, of weeks before the GPS release date.

a) Determine the number of pre-orders the manufacturer can expect to have 10 weeks before the release date. (1 mark)

$I = -3\sqrt{10-1} + 15$

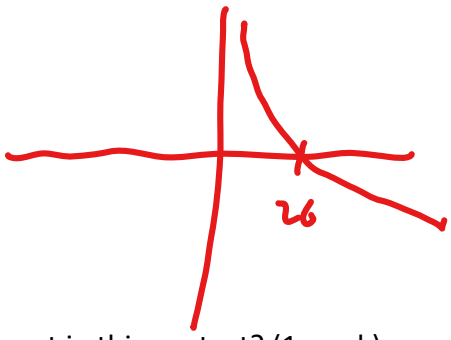
$= -3\sqrt{9} + 15$

$= -9 + 15$

$= 6$ So 6000 ORDERS

b) Graph the function and determine the *x*-intercept using the graph. (1 mark)

26 WEEKS



c) What is the meaning of the *x*-intercept in this context? (1 mark)

26 WEEKS PRIOR TO RELEASE, THERE WAS NO INTEREST.

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