

Name: _____

Student #: _____

Date: _____

T.A. #: _____

Mathematics 12 Pre-Calculus
LEARNING GUIDE 4 QUIZ – 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.

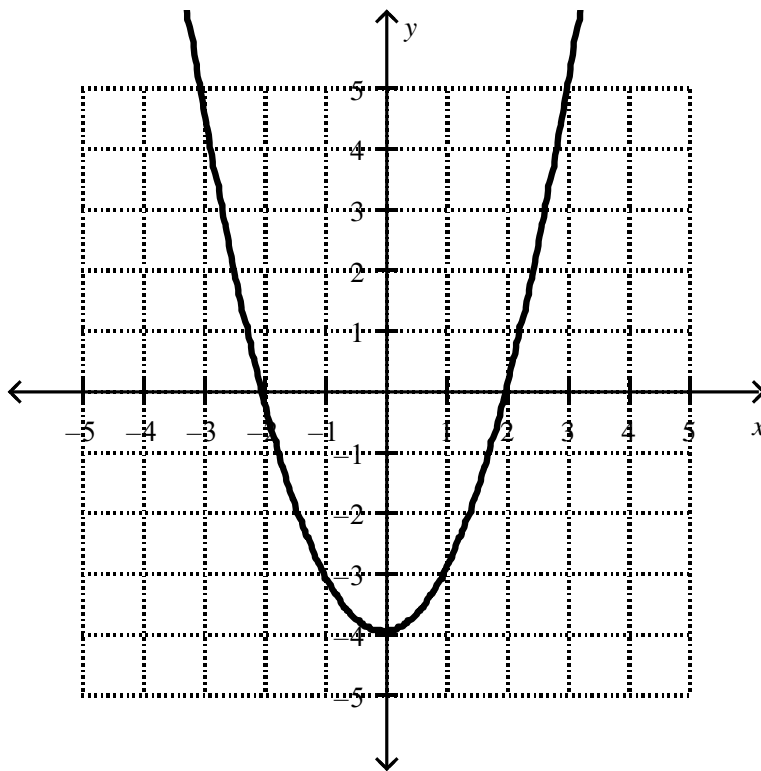
1. What transformations need to be made to the function $y = \sqrt{x}$ to obtain the graph of the function $y = -3\sqrt{2(x-1)}$? (2 marks)

2. Determine the equation of the 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)

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3. Determine the domain and range of the following function:
$$f(x) = -\frac{1}{5}\sqrt{3(x+1)}$$

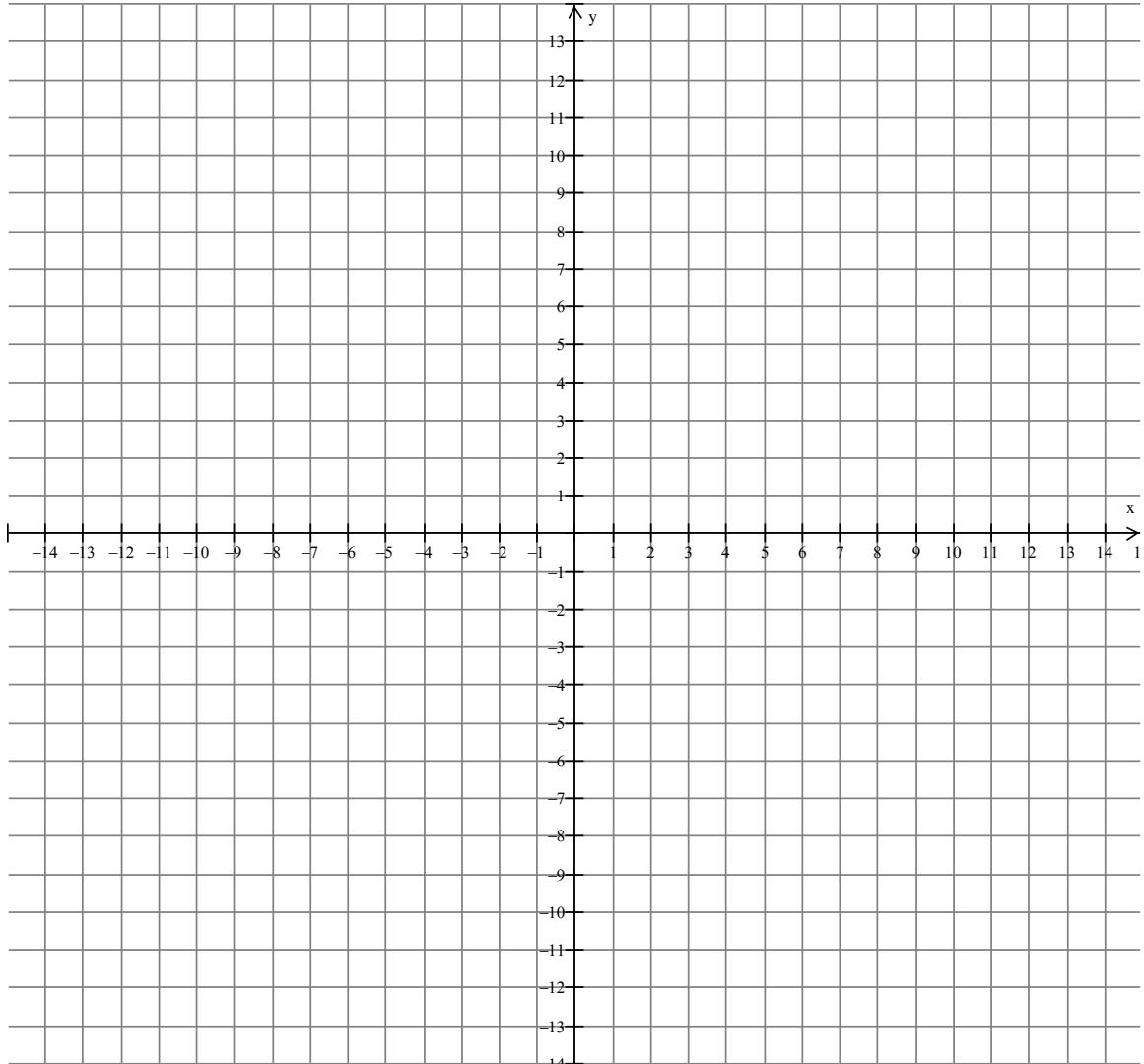
4. Using this graph of $y = f(x)$, sketch the graph of $y = \sqrt{f(x)}$. (2 marks)



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)

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

7. Solve the equation $-5 + 2\sqrt{5x + 32} = 8$ graphically. Be sure to indicate the equations of the function(s) used in the graph and how the graph(s) help you determine the solution. (2 marks)



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)

b) Use your graphing calculator to determine the x -intercept by graphing the function. (1 mark)

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