MATH133 Unit 3 – Individual Project 2

1) Solve algebraically. Trial and error is not an appropriate method of solution. You must show all your work.

Learn how to type math roots and fractions by clicking on the link in the assignment list. Alternately, you may type $\sqrt[3]{x}$ as cuberoot(x) and show raising to the nth power as ^n, like x^3 is typed x^3 or $x^{3/2}$ is typed x^(3/2).

a) $\sqrt[3]{x} - 5 = 3$
Answer:

Show your work here:

b) $x^{\frac{3}{2}} = 27$

Answer:

Show your work here:

c) $\dfrac{3}{4} = 1 - \dfrac{3x - 2}{x + 1}$

Answer:
Show your work here:

d) Solve algebraically and check your potential solutions: $\sqrt{x + 2} - x = 0$

Answer:

Show your work here:

2)   For the following function, C computes a value, where if you add millions of dollars to the value, the result is the cost of implementing a city recycling project when x, as a percent (not its decimal equivalent), citizens participate.

$$C(x) = \frac{1.5x}{100 - x}$$

a)   Using this model, determine the cost if 60% of the citizens participate?

Answer:

Show your work here:

b)   Using this model, find the percentage of participation that can be expected if $5 million is spent on this recycling project? Set up an equation and solve algebraically.   Round to the nearest whole percent.

Answer:

Show your work here:

3) a) If $y = \sqrt{x} + 2$, fill in the following table for x = 0, 1, 2, 3, 4. Round to three decimal places where necessary.

x	y
0	
1	
2	
3	
4	

Show your work here:

b)   Explain why no negative values are chosen as values to substitute in for x.

Answer:

c)   Graph in MS Excel and paste your graph here. For help on creating your graph in Excel and inserting graphs into a Word Doc please see the tutorial in the Assignment List.

Answer:

4)   A water tank is *h* feet high. Water is flowing from this water tank with a velocity *V* feet per second. The model representing the relationship between the velocity and height is given by

$$V = 8\sqrt{h}$$

a)   Find the height of a water tank that provides a water flow of 80 feet per second.

Answer:

Show your work here:

b)   Find the velocity of the water flow when the height is 150 feet. Round your answer to two decimal places.

Answer:

Show your work here: