Name:

MATH133 Unit 3 – Individual Project -B

1) Solve the following 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 link in the assignment list. Alternately, you may type $\sqrt[3]{x}$ as cuberoot(*x*) and show raising to the *n*th power as ^*n*, like x^3 is typed *x*^3 or $x^{3/2}$ is typed x^(3/2).

a) $\frac{1}{4} = 3 - \frac{2x-1}{x+2}$

Answer:

Show your work here:

b) $x^{\frac{3}{2}} = 125$

Answer:

Show your work here:

c) $\sqrt[3]{x} - 4 = 2$

Answer:

Show your work here:

2) Solve algebraically and check your potential solutions:

a) $\sqrt{x+20} - x = 0$

Answer:

Show your work here:

b) $5 - \frac{2}{x-6} = \frac{10-2x}{x-6}$

Answer:

Show your work here:

c) What potential solution did you obtain? Explain why this is this not a solution.

Answer:

3) The following function computes the cost, *C* (in millions of dollars), of implementing a city recycling project when *x* percent of the citizens participate.

$$C(x) = \frac{1.4x}{100 - x}$$

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

Answer:
Show your work here:

b) Using this model, determine the percentage of participation that can be expected if $4 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:

4) 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.

Answer:

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 or another web-based graphing utility and paste your graph here. Read the information in the assignments list to learn more about how to graph in MS Excel.

Answer:

5) 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

$$V = 6\sqrt{h}$$

a) Find the height of a water tank that provides a water flow of 60 feet per second.

Answer:

Show your work here:

b) Find the velocity of the water flow when the height is 130 feet. Round your answer to two decimal places.

Answer:

Show your work here: