Week 8 Homework MAT 2601 (Homework)

Question 1

$C(x) = 2x^2 + 130x + 900$.

Question 2.

$4600.

Question 3.

(a) There is a **profit** of $**3520**

(b) **896** units.

Question 4

(a) $\bar{C} = \frac{20}{x} + \frac{1}{10}x + 67$

(b) 70.67

Question 5.

$C(y) = 6 + 0.70y$

Question 6.

$C(y) = 8.1 + 0.71y$

Question 7

~~$C(y) = 6.08 + \left(0.03 + \frac{\ln(y+1)}{y+1}\right)$~~.

$C(y) = 0.03y + \frac{1}{2}\left(\ln(1+y)\right)^2 + 6.08$

Question 8.

Yes.

Question 9

$$\frac{dy}{dx} = \frac{2y+2}{x}.$$

NO.

Question 10

$$y = e^{x-8} + 9 - e^{-8} \quad \text{OR} \quad y = e^{x-8} - 8 + \ln(9)$$

Question 11.

~~$y = \frac{2}{3x^2}$~~

$$y = \left(\frac{-2}{3x^c} + C\right)^{1/2} \quad \text{OR} \quad \frac{y^2}{2} + \frac{1}{6x^c} + C = 0$$

Question 12

$$\frac{y^2}{2} + 5y = \frac{x^3}{3} + \frac{x^2}{2} + C \quad \text{OR} \quad 3y^2 + 30y = 2x^3 + 3x^2 + C.$$

$$\text{OR} \quad y = \frac{-30 \pm \sqrt{900 - 12(-2x^3 - 3x^2 - C)}}{6}.$$

Question 13.

$$y + 1 - \ln(y+1) = \left(-\frac{1}{2}e^{2x}\right) + C.$$

Question 14

$$\frac{y^2}{2} = x + 8\ln|x| + 7.$$

OR.

$$y^2 = 2x + 16\ln|x| + 14$$

OR

$$y = \sqrt{2x + 16\ln|x| + 14.}$$

Question 15.

$$\frac{2}{x} = \frac{3}{y} + 8 \quad \text{OR} \quad \frac{8}{x} = \frac{12}{y} + 8$$

Question 16. nine

$$y(p+q)^{\frac{3}{5}} = 64.$$

OR.

$$y = \frac{64}{(p+q)^{\frac{3}{5}}}$$

nine.