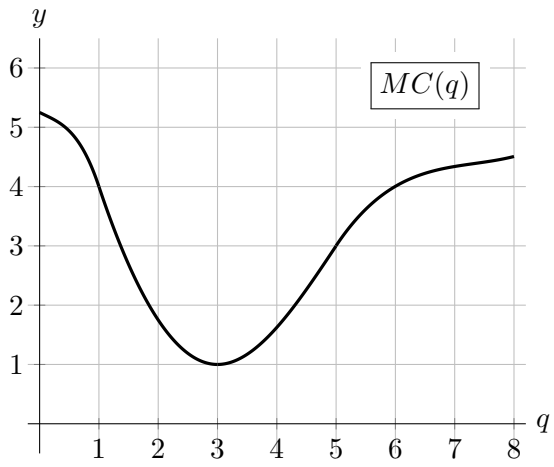
7. [9 points]

Anna is interested in selling some feed corn to a pair of local farms, and is trying to determine the optimal amount to sell. One farm is willing to buy up to 5000 bushels at a price of \$4 per bushel, while the other is willing to buy up to 3000 bushels at a price of \$2 per bushel. The graph to the right shows the marginal cost $MC(q)$, in thousands of dollars per thousand bushels, of q thousand bushels of corn.



Assume Anna sells as much corn as she can to the farm paying \$4 per bushel before selling any to the farm paying \$2 per bushel.

a. [2 points] On the axes above, carefully sketch the graph of the marginal revenue $MR(q)$, in thousands of dollars per thousand bushels, of q thousand bushels of corn.

b. [1 point] What is the total revenue Anna receives for selling 6000 bushels of corn?

\$20,000 \$22,000 \$24,000 \$26,000 NONE OF THESE

c. [2 points] Recall that *profit*, $\pi(q)$, equals total revenue minus total cost. Circle all values of q below that are critical points of the profit function $\pi(q)$.

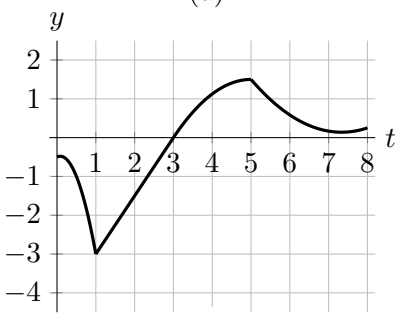
$q = 1$ $q = 3$ $q = 5$ $q = 6$ NONE OF THESE

d. [2 points] What production level maximizes profit? Circle all correct answers below.

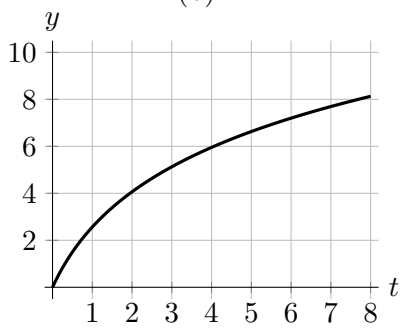
$q = 1$ $q = 3$ $q = 5$ $q = 6$ $q = 8$ NONE OF THESE

e. [2 points] Which of the following *could* be the graph of the total cost function? Circle the letters of *all* correct answers below.

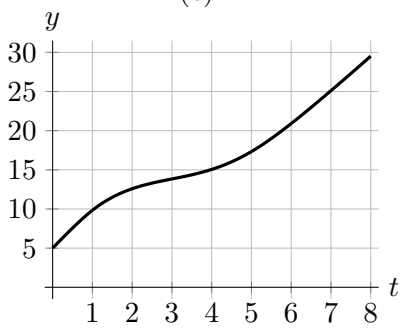
(a)



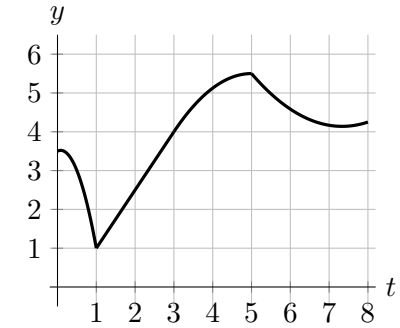
(b)



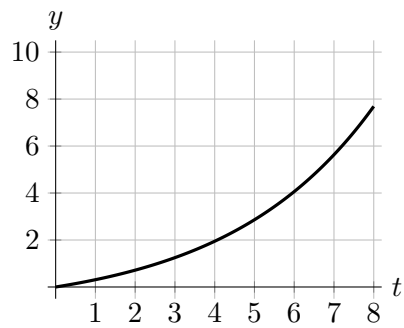
(c)



(d)



(e)



(f)