

Math 151 - Quiz 3

February 17, 2016

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) A company uses the formula $C(x) = 0.02x^2 - 3.4x + 150$ to model the unit cost (in dollars) for producing x stabilizer bars. For what number of bars is the unit cost at its minimum? What is the unit cost at that level of production?

THE GRAPH OF $C(x)$ IS A PARABOLA OPENING UPWARD.

MINIMUM VALUE OF $C(x)$ OCCURS AT VERTEX.

$$\text{Vertex: } x = -\frac{b}{2a} = -\frac{(-3.4)}{2(0.02)} = 85$$

85 BARS PRODUCES MIN COST $C(85) = 5.5$

2. (2 points) The graph of a function is shown below. Even though no scale is shown, you should be able to draw some conclusions about the function. Which of these could not possibly be the function? Circle all that apply.

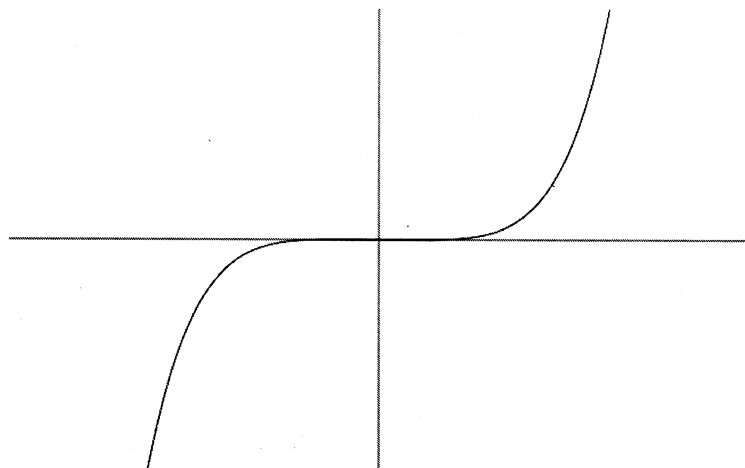
$y = \frac{2}{x^3}$

$y = \frac{1}{3}x^5$

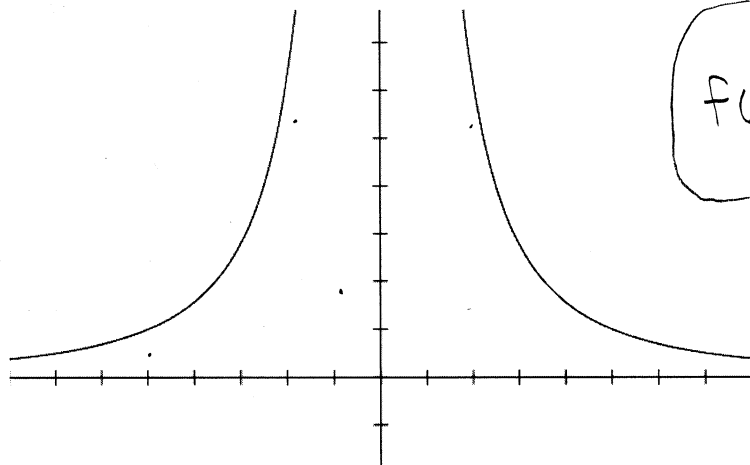
$y = x^7$

$y = -3x^4$

$y = 2x^5$

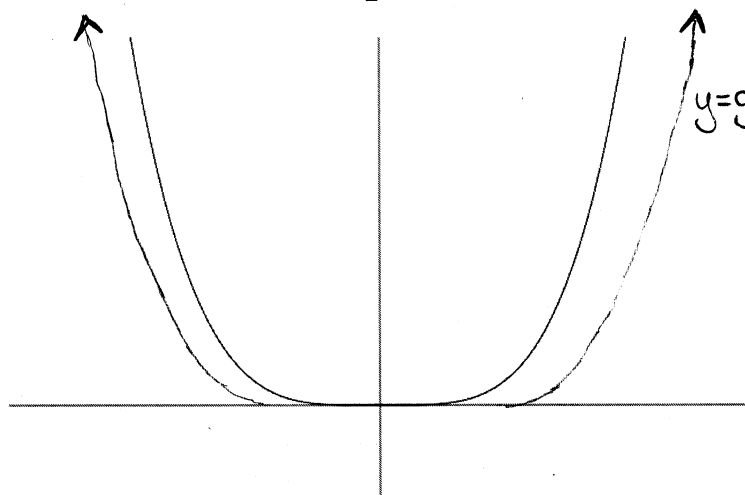


3. (2 points) Give a function that could have the given graph.



$$f(x) = \frac{1}{x^2}$$

4. (2 points) The graph shown below is the graph of $f(x) = ax^4$, where $a > 1$. Using the same axes, sketch the graph of $g(x) = \frac{1}{2}x^4$.



THE GRAPH
OF $g(x)$ WILL
BE
VERTICALLY
COMPRESSED
RELATIVE
TO THE
GIVEN
GRAPH.