MAT 151 Quiz 11

Apr. 9, 2020

Let $f(x) = -3\,x^3 + 4$ and $g(x) = 4\,x^2 - 2\,x$. Solve the next two questions.

1. [15F] If $h(x) = 5f(x) - (-3xg(x))$, find $h(3)$.

2. [18F] Compute the rate of change of the function $h(x)$ between $0 \leq x \leq 3$.

3. [23F] Given a function $h(x) = e^x$ and $k(x) = e^{-8(x-3)} + 6$. Describe how to get the graph of $k(x)$ from the graph of $h(x)$. Be very precise about the order of the transformation and the unit of each transformation.

4. [24T] Convert the angle $215°$ to radian. (Keep your answer exact and do not round it to decimals.)

5. [26T] Find the equation of a circle whose center is at $(9, -6)$ and passing through the point $(3, 4)$. Show all work.

6. [25T] Calculate the area of the sector that is cut out by an angle of $130°$ in the circle from the last question. Leave your answer exact. Do not round. Show all work.

Use the following information to answer the next question: Suppose that ΔABC is a right triangle, with right angle at B. Let us call $\angle BAC = \beta$. Let $AB = 4$, $AC = 9$.

7. [27T] Find $\sin(\beta)$, $\cos(\beta)$ and $\tan(\beta)$. Leave your answer exact. Do not round.

8. [12E] Consider the expression $5^x \cdot 5^y$. Which one(s) of the following expressions is/are equivalent to the aforementioned expression: 25^{xy}, 5^{xy}, 5^{x+y}, 10^{x+y}? Explain your answer.