6. [11 points]
a. [6 points] Find the Taylor series about $x=0$ for the function $f(x)=3+\cos \left(2 x^{2}\right)$. Write your answer using sigma notation and also write out the first three non-zero terms. You do not need to simplify any factorials or exponentials that appear in your answer.
b. [5 points] The function $f(x)$ from part a) has an antiderivative $F(x)$ which satisfies $F(0)=9$. Find the first four nonzero terms of the Taylor series about $x=0$ for $F(x)$. You do not need to simplify any factorials or exponentials that appear in your answer.
7. [5 points] Find an expression for the exact value of

$$
12+\frac{4}{5}-\frac{4^{2}}{2(5)^{2}}+\frac{4^{3}}{3(5)^{3}}+\cdots+\frac{(-1)^{n+1} 4^{n}}{n 5^{n}}+\ldots
$$

which does not involve an infinite sum (i.e. no sigma notation or "...").

