Gateway #2: Calculating Antiderivatives

Note: 1. You may re-take this test as often as you need to in order to pass.
2. A passing grade is 7 or 8 correct.
3. Clearly indicate your answer.

1.   Calculate the most general antiderivative of: x^2.

2.   Calculate the most general antiderivative of: $x^4 + 2 \cdot x^2 + 1$.

3.   Calculate the most general antiderivative of: $\ln(4) \cdot 4^x$.

4.   Calculate the most general antiderivative of: $\dfrac{4}{1+x}$.

5. Calculate the most general antiderivative of: $\dfrac{2x}{1+x^2}$.

6. Calculate the most general antiderivative of: $\dfrac{1}{1-3x}$.

7. Calculate the most general antiderivative of: $3x^2 \cdot \sin(x^3)$.

8. The function $F(x) = e^x + x \cdot \sin(x) + e^{100}$ is an antiderivative of: (circle one)

(a) $f(x) = e^x + \sin(x) + x \cdot \cos(x)$.

(b) $f(x) = e^x + x^2 \cdot \cos(x) + e^{100x}$.

(c) $f(x) = e^x + x^2 \cdot \cos(x) + e^{100}x$.

(d) $f(x) = e^x + x^2 \cdot \sin(x) + 100 \cdot e^{99}$.