Week 11 Worksheet

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Compute the following antiderivatives.

1. $\int \frac{7}{z} dz$
2. $\int \frac{x^3+x+1}{x^2} dx$
3. $\int \frac{10x}{3+5x^2} dx$
4. $\int p(p+2)^6 dp$
5. $\int \frac{(\log_2(5x+1))^2}{5x+1} dx$
6. $\int \frac{10^{5\sqrt{x}+2}}{\sqrt{x}} dx$
7. $\int \frac{\sec x+\cos x}{\cos x} dx$ (Hint: recall that $(\tan x)' = \sec^2 x$)
8. Challenge: It is a theorem that if f is a function whose domain is an interval, and f has an antiderivative, say F, then all antiderivatives of f are of the form $F(x) + C$ for constants C. Give an example to show this need not be true if the domain of f is not an interval, e.g. if f is a function defined only on $(-\infty, 0) \cup (0, \infty)$.