R. Bruner
Math 2010, Winter 2005, Quiz 14
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Compute

1. $\frac{d}{dx}\int_1^{x^2}\sqrt{1-\frac{1}{t}}\,dt$
2. $\frac{d}{dx}\int \sin(\sin(x))\,dx$
3. $\int_3^5 3t^2-2t\,dt$

1. $\frac{d}{dx}\int_1^{x^2}\sqrt{1-\frac{1}{t}}\,dt = \sqrt{1-\frac{1}{x^2}}\cdot 2x$

2. $\frac{d}{dx}\int \sin(\sin(x))\,dx = \sin(\sin(x))$

3. $\int_3^5 3t^2-2t\,dt = t^3-t^2\Big|_3^5 = (5^3-5^2)-(3^3-3^2)$

$= (125-25)-(27-9) = 100-18 = 82$