1. $\dfrac{3}{220}\left(4x^5+2\right)^{11}+C$

2. $*\ -\dfrac{14}{15}$

3. $\dfrac{3}{8}\left(y^2-8y\right)^{\frac{4}{3}}+C$

4. $-\dfrac{124}{15}$

5. 5

6. $\displaystyle\int_0^\infty \frac{x}{(x^2+2)^2}dx=\frac{1}{4}$, so the integral converges.

7. 1

8. $\dfrac{125}{6}$

9. $\text{Vol}=\pi\displaystyle\int_0^1\left(x^2-x^6\right)dx$

10. $\text{Vol}=2\pi\displaystyle\int_0^1(2-x)\left(x^2-x^3\right)dx$

11. $F'(x)=\sec^2 x\sqrt{1+\sqrt{\tan x}}$

12. $\displaystyle\int_1^2\frac{1}{1+x}dx\approx .39936$

13. $h'(r)=\varphi(p(r))\cdot p'(r)$

14. $\displaystyle\lim_{x\to\infty}\tan^{-1}(x)=\frac{\pi}{2}$ and $\displaystyle\lim_{x\to-\infty}\tan^{-1}(x)=-\frac{\pi}{2}$