1. $A = \frac{3}{2} - 2\ln 2$

2. (a) 2π (b) $\pi \int_0^{\sqrt{\pi}} \sin^2(x^2)\, dx$

3. $y' = \dfrac{\frac{\frac{1}{2\sqrt{x}}}{\sqrt{x}\sqrt{x-1}}\, e^{2x} - \operatorname{arcsec}(\sqrt{x})\, 2e^{2x}}{e^{4x}}$

4. (a) $\frac{1}{5}e^{2x}(2\sin x - \cos x) + C$ (b) $\frac{2}{3}\left(1 - \frac{1}{t}\right)^3 + C$
   (c) $\frac{1}{4}\arcsin(4x) + C$ (d) $\frac{1}{8}x - \frac{1}{96}\sin 12x + C$
   (e) $-\ln|4x-1| + \frac{3}{2}\ln(x^2+1) + C$ (f) $\ln(1+\sqrt{2})$

5. (a) $-\frac{1}{2}$ (b) -3 (c) 0

6. (a) Diverges: $= \infty$ (b) Converges: $= \frac{2}{e}$

7. $y = \ln(x - \ln(x+1) + e)$

8. Diverges (oscillates "± 1").

9. $\frac{1}{2}$

10. (a) Converges (RT) (b) Diverges (LCT with $\sum \frac{1}{n}$)
    (c) Converges ($\sqrt[n]{\ }$T) (d) Diverges (LCT with $\sum \frac{1}{n^{1/2}}$)

11. (a) AC ($\int$T or LCT) (b) D (nTT)

12. $-\frac{4}{3} \le x \le -\frac{2}{3}$

13. M.S.: $1 + 2x + 2x^2 + \frac{4}{3}x^3 + \frac{2}{3}x^4 + \cdots = \displaystyle\sum_{n=0}^{\infty} \frac{2^n x^n}{n!}$

    Radius of convergence $= \infty$