Problem V

$$y(t) = \begin{cases} \frac{4}{3}\sin t - \frac{2}{3}\sin 2t & \text{for } 0 \le t \le \pi \\ \frac{8}{3}\sin t & \text{for } t > \pi, \end{cases}$$

Problem W

$$S(0) = \pi/2, \ S(\pi) = \pi, \quad a_0 = \frac{3\pi}{4}, \ a_n = \frac{\cos n\pi - 1}{\pi n^2}, b_n = \frac{3}{n}$$

$$S_f(x) = \frac{3\pi}{4} - \frac{2}{\pi}\sum_{k=1}^{\infty}\frac{\cos(2k-1)x}{(2k-1)^2} + 3\sum_{n=1}^{\infty}\frac{\sin nx}{n}$$

Problem X

$$X_n(x)T_n(t) = A_n \cos nx e^{(2-n^2)t}$$

$$u(x,t) = \frac{3}{2}e^{2t} + 2\cos x e^t + \frac{1}{2}\cos 2x e^{-2t}$$

Problem Y

$$c = \pm 2, \quad f(z) = -\frac{i}{2}e^{2z} + iC \text{ or } f(z) = \frac{i}{2}e^{-2z} + iC$$

Problem Z

$$f(z) = \sum_{n=0}^{\infty}\frac{(-1)^n}{n!z^{2(n+1)}}, \ \text{Res}_{z=0}f(z) = 0.$$

Problem Æ
Det komplekse integralet er $\frac{pi}{4}e^{-8-6i}$ og realdelen blir $\frac{\pi\cos 6}{4e^8}$.

Problem Ø

$$\int_0^{2\pi}\frac{d\theta}{5 + 4\sin\theta} = \frac{2\pi}{3}$$

Problem Å

$$\int_0^{\infty}\frac{\cos x - \cos 5x}{2x^2}dx = \pi.$$