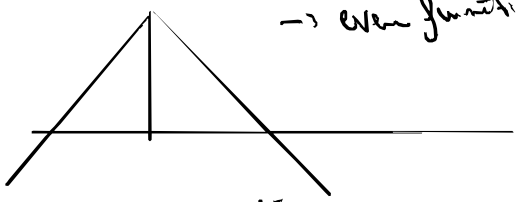
5) $\sum_{m=0}^{+\infty} \frac{1}{\left(m+\frac{1}{2}\right)^2}$

$f(x) = \frac{\pi^2}{2}\left(1 - \frac{|x|}{\pi}\right)$; $-2\pi \leq x \leq 2\pi$



→ even function, so $b_m = 0$

$a_0 = \frac{1}{2\pi} \cdot \int_{-2\pi}^{2\pi} \frac{\pi^2}{2}\left(1 - \frac{|x|}{\pi}\right) dx$

$= \frac{1}{\pi} \cdot \int_0^{2\pi} \frac{\pi^2}{2} \cdot \left(1 - \frac{x}{\pi}\right) dx = 0$

$a_m = \frac{1}{\pi} \cdot \int_{-2\pi}^{2\pi} \frac{\pi^2}{2}\left(1 - \frac{|x|}{\pi}\right) \cdot \cos\left(\frac{m\pi x}{2\pi}\right) dx = \frac{2}{\pi} \int_0^{2\pi} \frac{\pi^2}{2}\left(1 - \frac{x}{\pi}\right) \cdot \cos\left(\frac{mx}{2}\right) dx$

$= -2\left(\underbrace{m \cdot \sin(\pi m)\pi}_{=0} + 2\cos(\pi m) - 2\right) = -\frac{4\cos(\pi m) + 4}{m^2}$

m^2

.... I don't understand the solution!