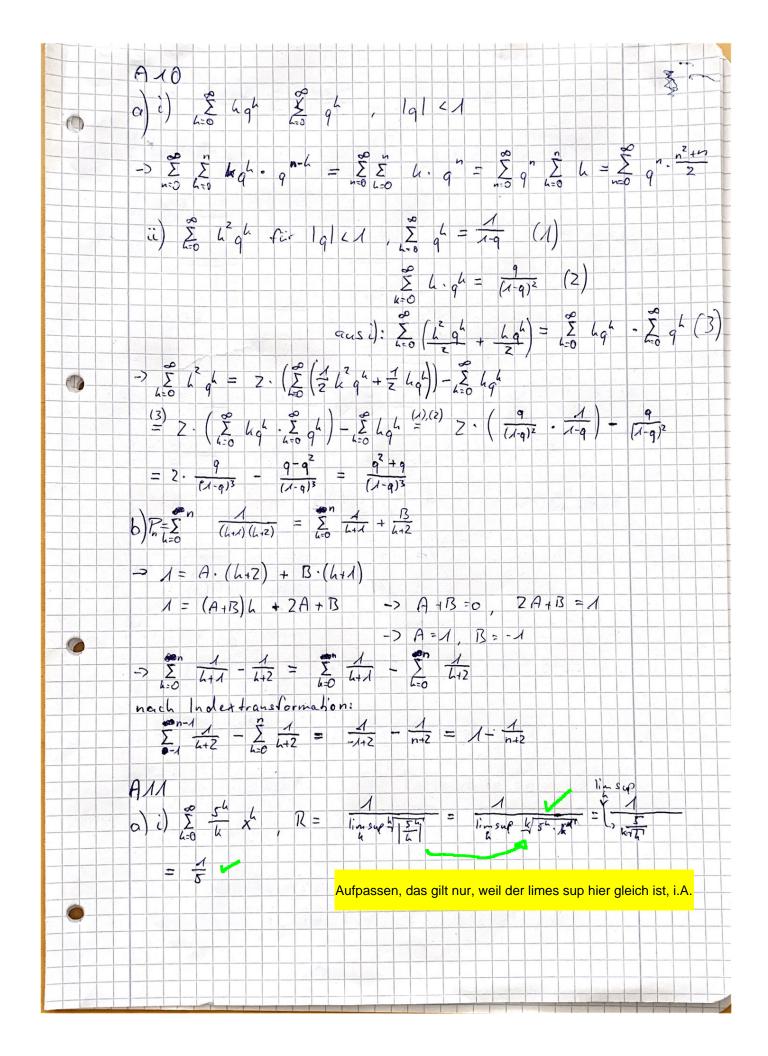
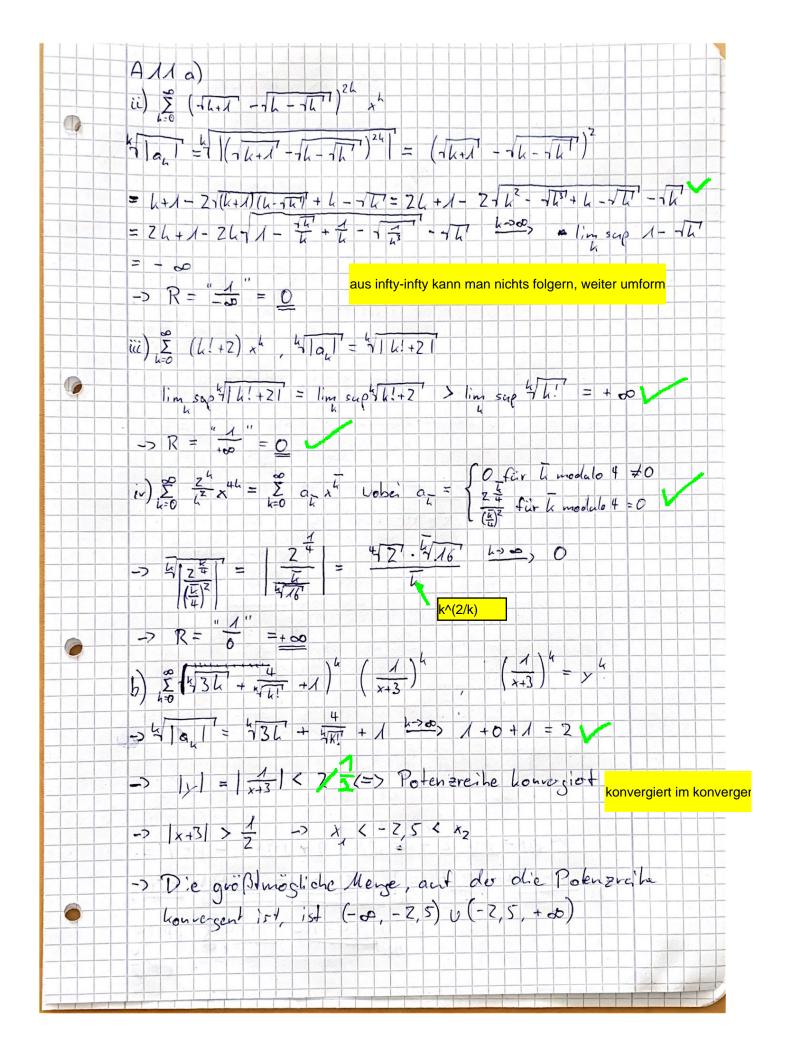
## Deckblatt für die Abgabe der Übungsaufgaben IngMathC2

| Name, Vorname:                                      | Bodky, Daniel |
|---|---------------|
| StudOn-Kennung:                                     | as37alyj      |
| Blatt-Nummer:                                       | 4             |
| Übungsgruppen-Nr:                                   | 7             |
| Die folgenden Aufgaben gebe ich zur Korrektur frei: |               |
| <u>A10</u> , <u>A11</u> , <u>A12</u>                |               |
| 7/10 *30 = 21                                       |               |





A12 0) sin (3x), cos (3x) i) exp (3ix) = exp (ix) -> Euler: cos (34) + i sin (3x) = (cos (x) + i sin (x))3 =  $(\cos x)^3 - 3\cos x (\sin x)^2 + i(-(\sin x)^3 + 3(\cos x)^2 \sin x)$ Realteil: cos (3x) = cos x - 3 sin x cosx  $\sin(3x) = -\sin^3 x + 3\sin x \cos^2 x$ -> cos(3x) = cos3x - 3 sin2x cosx sin (3x) = -(sin3x) + 3 sinx cosx (i) sin 3x = sin (2x+x) = sin (2x). cosx + cos (2x). sinx Sin Zx = sin(++x) = sinx cosx + cosx sinx = 2 sinx cosx cos Zx = cos x - sinx sin3x = Z sinx cosx · cosx + (cos2x - sin2x) sinx = Zsinx cos2x + sinx cos2x - sin3x = 3s.nx ros x - s.n3x cos 3x = cos (2x+x) = cos 2x cosx - sin 2x sinx = (cos2x - sin2x) cosx - 2sin2x cosx = (0s x - sin 2 cosx - 2sin 2 cosx = (0s)x - 3 sin2x (0sx b)i) sin 3 . . sin 3x = 3sinx - 4sin x -> einsetzen:  $3 \sin \frac{\pi}{3} - 4 \sin^3 \frac{\pi}{3} = \sin 3 \frac{\pi}{3} = 0$ sin = y , 3 sin = -4 sin = = 0 3 5:- 4 - 4 - 3 = 0 3 = 4,3 -> da y => 0 land Agale ist sin 3 = also 7/21 = = 131

