

## Solutions to selected problems in HW for Week 11

1. Section 15.4: Problem 26.

$$\int_0^{\tan^{-1} \frac{4}{3}} \int_0^{3 \sec \theta} r^7 dr d\theta + \int_{\tan^{-1} \frac{4}{3}}^{\frac{\pi}{2}} \int_0^{4 \csc \theta} r^7 dr d\theta = \int_0^4 \int_0^3 (x^2 + y^2)^3 dx dy.$$

2. Section 15.4: Problem 42.

$$\int_0^\infty \int_0^\infty \frac{1}{(1+x^2+y^2)^2} dx dy = \int_0^{\frac{\pi}{2}} \int_0^\infty \frac{1}{(1+r^2)^2} r dr d\theta = \frac{\pi}{2} \int_1^\infty \frac{1}{u^2} \frac{du}{2} = \frac{\pi}{4}.$$