

## Fall 2019 Math 152

**Week in Review I**  
*courtesy: Amy Austin*  
(covering sections 5.5-6.1)

### Section 5.5

- $\int \frac{1+x^2-x}{\sqrt{x}} dx =$
- $\int_0^1 (x^3-2)^2 dx =$
- $\int 5x^2(3x^3-1)^8 dx =$
- $\int_0^1 x^2 e^{2x^3-5} dx =$
- $\int_{-4}^0 \frac{1}{\sqrt{1-2x}} dx =$
- $\int_1^{1/2} \cos \pi x dx =$
- $\int_0^{\pi/12} \tan(3x) dx =$
- $\int \left( \frac{1}{\sqrt{1-x^2}} - 4x^{-1} + e^x + \frac{2}{x^2+1} - \frac{x+1}{x^2+4} \right) dx =$
- $\int \frac{e^x}{1+e^x} dx =$
- $\int_1^2 \frac{5}{2x+1} dx =$
- $\int \frac{\sin t}{\cos^5 t} dt =$
- $\int \frac{x}{\sqrt{x+1}} dx =$
- $\int \frac{2x^3}{x^2-1} dx =$

### Section 6.1

- Find the area bounded by  $y = \cos x$ ,  $y = 0$ ,  $x = 0$ ,  $x = \frac{\pi}{3}$ .
- Find the area bounded by  $y = \sin x$ ,  $y = 0$ ,  $x = \frac{\pi}{4}$ ,  $x = \frac{3\pi}{2}$ .
- Find the area bounded by  $y = \sin x$ ,  $y = \cos x$ ,  $x = -\frac{\pi}{2}$  and  $x = \frac{\pi}{2}$ .
- Find the area bounded by  $y = x^2$  and  $y = 2x - x^2$ .
- Find the area bounded by  $x = 45 - 5y^2$  and  $x = 5y^2 - 45$ .
- Sketch the region  $R$  bounded by  $x = y^2$  and  $x = 5y + 6$ . Set up but do not evaluate an integral in terms of  $y$  and then an integral in terms of  $x$  that gives the area of this region.
- Sketch the region  $R$  bounded by  $x = \frac{1}{x}$ ,  $y = x$ ,  $y = \frac{1}{4}x$ ,  $x \geq 0$ . Set up but do not evaluate an integral that gives the area of  $R$ .
- Find the area of the region bounded by the parabola  $y = 3x^2$ , the tangent line to this parabola at  $(2, 12)$  and the  $x$ -axis.