

Name:

Math 10a
October 30, 2014
Quiz #7

1. $\int_0^1 3x^2 dx$

$$1$$

2. $\int_0^\pi \sin(x) dx$

$$-\cos(x)|_0^\pi = 2$$

3. $\int_1^{e^3} \frac{1}{x} dx$

$$\ln|x|_1^{e^3} = 3$$

4. $\int_0^2 x^3 dx$

$$\frac{x^4}{4}|_{x=0}^2 = 4$$

5. $\int_{-\pi/2}^{\pi/2} \left(\sin(\theta) + \frac{5}{2} \right) \cos(\theta) d\theta$

$$u = \sin(\theta) + \frac{5}{2}, \quad du = \cos(\theta)$$

$$\int_{u=3/2}^{u=7/2} u du = \frac{1}{2}((7/2)^2 - (3/2)^2) = 5.$$

6. $\int_{-2}^{e^6-3} \frac{1}{x+3} dx.$

$$\ln|x+3|_{x=-2}^{e^6-3} = 6.$$

7. $\int_{-2/7}^{-1/10} \frac{1}{x^2} dx$

$$-\frac{1}{x}|_{x=-2/7}^{-1/10} = 6.5$$

$$8. \int_0^{15} \frac{\sqrt{x+1}}{6} dx.$$

$$\frac{1}{6} \frac{(x+1)^{3/2}}{3/2} \Big|_{x=0}^{15} = \frac{16^{3/2} - 1^{3/2}}{9} = 7$$

$$9. \int_1^{3/2} 112(4x-5)^6 dx$$

$$112 \frac{(4x-5)^7}{7 \cdot 4} \Big|_{x=1}^{3/2} = 8.$$

$$10. \int_0^1 \frac{8x}{1+x^4} dx$$

$$u = x^2.$$

$$\int_{u=0}^{u=1} \frac{4du}{1+u^2} = 4 \arctan(u) \Big|_{u=0}^1 = \pi.$$