

**SAMPLE QUIZ 3**

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1. Compute:

(a)  $\int_2^5 6x^2 dx =$

(b)  $\int_1^2 x^3(x^4 + 1)^5 dx =$

(c)  $\int_0^1 \frac{x}{(x^2 + 3)^3} dx =$

(d)  $\int_e^{e^2} \frac{1}{x \ln x} dx =$

(e)  $\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} e^{\sin x} \cos x dx =$

2. (a) Sketch the area represented by the integral  $\int_0^1 \frac{1}{x^2 + 1} dx$ .

(b) Compute the area.

3. Find the area under the curve  $y = \sqrt{x^3}$  and above  $[1, 9]$ .4. Find the area under the curve  $y = \frac{2x^3 + x}{x^5}$  and above  $[1, 4]$ .5. Find the area between the curves  $y = 3x - 2$  and  $y = x^2$ .6. Find the area between the curves  $y = x^2$ ,  $y = \frac{1}{x^2}$ ,  $x = \frac{1}{2}$ , and  $x = 1$ .7. Find the area of the region between  $y = 2x^2 - 4x + 6$  and  $y = -x^2 + 2x + 1$  from  $x = 1$  to  $x = 2$ .8. Suppose:  $F'(x) = f(x)$ ,  $F(2) = 1$ ,  $F(3) = 5$ ,  $F(7) = 10$ . Then:

(a)  $\int_2^2 f(x) dx =$

(b)  $\int_2^3 f(x) dx =$

(c)  $\int_3^2 f(x) dx =$

(d)  $\int_2^7 f(x) dx =$

(e) The average value of  $f$  on  $[3, 7]$  is:9. Let  $G(x) = \int_1^x e^{\sqrt{t}} dt$ . Find  $G'(2)$ .10. Let  $G(x) = \int_{\frac{\pi}{6}}^{\sqrt{x}} \sin(t^2) dt$ . Find  $G'(\frac{\pi}{4})$ .