

Name: _____

Definite Integrals

1) Evaluate each of the following definite integrals

1) $\int_{\frac{1}{8}}^1 \frac{1}{8x\sqrt{4x^2-1}} dx$

2) $\int_0^{\frac{1}{2}} \frac{1}{\sqrt{1-x^2}} dx$

3) $\int_{\frac{1}{3}}^{\frac{2}{3}} \frac{dx}{3x\sqrt{9x^2-1}}$

4) $\int_0^1 \frac{x^3}{x^4+1} dx$

5) $\int_{\sqrt{2}}^2 \frac{1}{x\sqrt{x^2-1}} dx$

6) $\int_1^{e^2} 3(\ln x)^2 dx$

7) $\int_0^4 \frac{x}{\sqrt{2x+1}} dx$

8) $\int_{-1}^1 \frac{1}{1+x^2} dx$

9) $\int_0^{\frac{1}{6}} \frac{1}{\sqrt{1-9x^2}} dx$

10) $\int_{\sqrt{3}}^3 \frac{1}{9+x^2} dx$

11) $\int_0^3 e^{3-x} dx$

12) $\int_{-3}^{-1} \frac{dx}{x^2+6x+13}$

13) $\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{\cos x}{\sin x} dx$

14) $\int_1^{\sqrt{2}} x \cdot 2^{-x^2} dx$

15) $\int_0^{\frac{\pi}{6}} (\cos \theta) 4^{-\sin \theta} d\theta$

16) $\int_0^{1.2} 3^x dx$

17) $\int_{-3}^{-1} 10^{-x} dx$

18) $\int x^2 2^{x^3} dx$

19) $\int_1^3 (2t^2 + 3t + 1) dt$

20) $\int_0^{\frac{\pi}{6}} \sin t dt$

21) $\int_0^1 e^{3x+2} dx$

22) $\int_0^{\frac{\pi}{3}} -5 \tan 4x dx$

23) $\int_0^{\frac{\pi}{4}} \cos x dx$

24) $\int_0^4 (2t^3 - t) dt$

2) Evaluate each of the following definite integrals using the fundamental theorem of Calculus.

$$1) \int_0^4 (2 + x) dx$$

$$2) \int_{-1}^1 (2 + x^2) dx$$

$$3) \int_{-1}^1 (2x^3 - 2x) dx$$

$$4) \int_1^2 \left(\frac{1}{x^2} - \frac{1}{x^3} \right) dx$$

$$5) \int_0^{\pi} \sin t dt$$

$$6) \int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \sec^2 t dt$$