7.1-7.5 Mixed Practice

1. $\int x\sqrt{x^2-36}\,dx$	2. $\int \frac{x}{x^2-49}\,dx$	3. $\int \frac{1}{x^2-49}\,dx$
4. $\int e^{3x}\sin 2x\,dx$	5. $\int \left(x^2-10x+25\right)^{17}dx$	6. $\int \left(\cos^2 x+1\right)dx$
7. $\int \sec 7x\,dx$	8. $\int \sec^2 7x\,dx$	9. $\int \frac{1}{x\sqrt{x^2-4}}\,dx$
10. $\int_1^{e/2} \frac{\ln 2x}{x}\,dx$	11. $\int \frac{\cos x}{e^{\sin x}}\,dx$	12. $\int (\ln x)^2\,dx$
13. $\int \frac{1}{\cos x-1}\,dx$	14. $\int \tan x\ln(\cos x)\,dx$	15. $\int \frac{10}{\sqrt{100-x^2}}\,dx$
16. $\int x^2e^{3x}\,dx$	17. $\int \frac{e^{2x}}{1-e^{2x}}\,dx$	18. $\int \arctan 5x\,dx$
19. $\int \tan 5x\,dx$	20. $\int 4^x\,dx$	21. $\int \frac{\cos^3(4x)}{\sqrt{\sin(4x)}}\,dx$

22. $\int \frac{5}{x^3+x^2}\,dx$	23. $\int_0^{\pi} x\sin 2x\,dx$	24. $\int \frac{6}{x^2+8x+25}\,dx$	25. $\int \frac{x-5}{x+1}\,dx$

26.

$$\int_2^3 \frac{3}{(x-1)(x+2)}\,dx =$$

(A) $-\frac{33}{20}$ (B) $-\frac{9}{20}$ (C) $\ln\left(\frac{5}{2}\right)$ (D) $\ln\left(\frac{8}{5}\right)$ (E) $\ln\left(\frac{2}{5}\right)$

27.

If $\int x^2\cos x\,dx = h(x) - \int 2x\sin x\,dx$, then $h(x) =$

(A) $2\sin x + 2x\cos x + C$ (B) $x^2\sin x + C$ (C) $2x\cos x - x^2\sin x + C$

(D) $4\cos x - 2x\sin x + C$ (E) $\left(2-x^2\right)\cos x - 4\sin x + C$

28.

$$\int x\sin(5x)\,dx =$$

(A) $-x\cos(5x)+\sin(5x)+C$ (B) $-\frac{x}{5}\cos(5x)+\frac{1}{25}\sin(5x)+C$ (C) $-\frac{x}{5}\cos(5x)+\frac{1}{5}\sin(5x)+C$

(D) $\frac{x}{5}\cos(5x)+\frac{1}{25}\sin(5x)+C$ (E) $5x\cos(5x)-\sin(5x)+C$

29.

$$\int_1^4 t^{-3/2}\,dt =$$

(A) -1 (B) $-\frac{7}{8}$ (C) $-\frac{1}{2}$ (D) $\frac{1}{2}$ (E) 1

30.

$$\int \frac{2x}{x^2+3x+2}dx =$$

(A) $\ln|x+2|+\ln|x+1|+C$ (B) $\ln|x+2|+\ln|x+1|-3x+C$ (C) $-4\ln|x+2|+2\ln|x+1|+C$

(D) $4\ln|x+2|-2\ln|x+1|+C$ (E) $2\ln|x|+\frac{2}{3}x+\frac{1}{2}x^2+C$

31.

The table below gives values of f, f', g, and g' for selected values of x.

x	1	2
$f(x)$	3	2
$f'(x)$	-2	1
$g(x)$	-1	3
$g'(x)$	1	-3

If $\int_1^2 f'(x)g(x)\,dx = 3$, then $\int_1^2 f(x)g'(x)\,dx =$

(A) -9. (B) -4.

(C) -3. (D) 6.

32.

$$\int (4x+7)^5\,dx =$$

(A) $\frac{2(4x+7)^6}{3}+C$ (B) $\frac{(4x+7)^6}{6}+C$

(C) $\frac{(4x+7)^6}{24}+C$ (D) $\frac{3(4x+7)^6}{2}+C$

33.

$$\int (\sin x)e^{2+\cos x}\,dx =$$

(A) $-e^{2+\cos x}+C$

(B) $e^{2+\cos x}+C$

(C) $(\cos x)e^{2+\cos x}+C$

(D) $e^{-\sin x}+C$

34.

$$\int (\sec^2 x)\sqrt[3]{3+\tan x}\,dx =$$

(A) $\frac{3}{2}(3+\tan x)^{2/3}+C$

(B) $\frac{3}{4}(3+\tan x)^{4/3}+C$

(C) $\frac{2}{3}(3+\tan x)^{2/3}+C$

(D) $\frac{4}{3}(3+\tan x)^{4/3}+C$

ANSWERS

1. $\frac{1}{3}\left(x^2-36\right)^{3/2}+C$

2. $\frac{1}{2}\ln\left|x^2-49\right|+C$

3. $\frac{1}{14}\ln\left|\frac{x-7}{x+7}\right|+C$

4. $\frac{1}{13}e^{3x}\left(3\sin 2x-2\cos 2x\right)+C$

5. $\frac{(x-5)^{35}}{35}+C$

6. $\frac{3}{2}x+\frac{1}{4}\sin 2x+C$

7. $\frac{1}{7}\ln\left|\sec 7x+\tan 7x\right|+C$

8. $\frac{1}{7}\tan 7x+C$

9. $\frac{1}{2}arc\sec\frac{|x|}{2}+C$

10. $\ln\frac{e}{2}-\frac{1}{2}\left(\ln\frac{e}{2}\right)^2=\frac{1}{2}(1-(\ln 2)^2)$

11. $-\frac{1}{e^{\sin x}}+C$

12. $x\left(\ln x\right)^2-2x\ln x+2x+C$

13. $\csc x+\cot x+C$

14. $-\frac{\left(\ln\left(\cos x\right)\right)^2}{2}+C$

15. $10\arcsin\frac{x}{10}+C$

16. $\frac{1}{27}e^{3x}\left(9x^2-6x+2\right)+C$

17. $-\frac{1}{2}\ln\left|1-e^{2x}\right|+C$

18. $x\arctan 5x-\frac{1}{10}\ln\left(1+25x^2\right)+C$

19. $-\frac{1}{5}\ln\left|\cos 5x\right|+C$

20. $\frac{4^x}{\ln 4}+C$

21. $\frac{1}{10}\left(\sqrt{\sin 4x}-\left(\sin 4x\right)^{5/2}\right)+C$

22. $-5\ln|x|-\frac{5}{x}+5\ln|x+1|+C$

23. $-\frac{\pi}{2}$

24. $2\arctan\left(\frac{x+4}{3}\right)+C$

25. $x-6\ln|x+1|+C$

26. D

27. B

28. B

29. E

30. D

31. D

32. C

33. A

34. B