Calculus 2 - Unit 7 Test, Part 1 REVIEW

Evaluate each indefinite integral.

Using memorized shortcuts (along with other procedures):

#1. $\int \sin\theta \, d\theta$

#2. $\int e^x \, dx$

#3. $\int 2x^3 \, dx$

#4. $\int 2x^{-1} \, dx$

#5. $\int 3\sec^2 x \, dx$

#6. $\int \csc x \cot x dx$

#7. $\int \sec x \tan x dx$

#8. $\int \frac{1-\sin^2 x}{\cos x} dx$

#9. $\int \frac{\sec x}{\left(\tan^2 x + 1\right)} dx$

#10. $\int \frac{2}{\left(x-10\right)^2 + 36} dx$

#11. $\int \frac{5}{x^2 - 12x + 38} dx$

Using u-substitution:

#12. $\int 7x^3 \left(3x^4 + 6\right)^5 \, dx$

#13. $\int 7e^{5x} dx$

#14. $\int \left(4x + 6\right) e^{\left(x^2 + 3x\right)} dx$

Using integration by parts:

#15. $\int x \sin\left(2x\right) dx$

#16. $\int x^2 \sin\left(x\right) dx$

#17. $\int e^{4x} \cos\left(2x\right) dx$

#18. $\int x \ln x \, dx$

#19. $\int x^2 e^x \, dx$

For trigonometric integrals:

#20. $\int \sin^3(x)\cos(x)\,dx$

#21. $\int \sin^3(x)\cos^5(x)\,dx$

#22. $\int \sin^2 x\,dx$

#23. $\int \cos^2 x\,dx$

#24. $\int \sec x\,dx$

#25. $\int \csc x\,dx$

#26. $\int \cot x\,dx$

Using trig substitution:

#27. $\int \frac{dx}{\sqrt{x^2+16}}$

#28. $\int \frac{x^3}{\sqrt{16-x^2}}\,dx$

Using partial fractions:

#29. $\int \frac{dx}{(x-4)(x+5)}$

#30. $\int \frac{dx}{x^2-5x-14}$

You pick the method:

#31. $\int 5\csc^2 x\,dx$

#32. $\int xe^x\,dx$

#33. $\int 2x^3\cos\left(x^2\right)dx$

#34. $\int \frac{3}{\sqrt{9-(x+5)^2}}\,dx$

#35. $\int 3x\ln\left(x^2\right)dx$

#36. $\int \csc^4(x)\cot^3(x)\,dx$

#37. $\int \tan x\,dx$

#38. $\int \cos x\left(1+\sin^2 x\right)dx$

#39. $\int \frac{\sin x+\sec x}{\tan x}\,dx$

#40. $\int \frac{2t}{(t-3)^2}\,dt$