

WORKSHEET # 10

Lesson # 68 Derivatives & Integrals of Logarithmic / Exp Func

Row # _____

Name _____

Period _____

Pg. 365

In Exercises 35–38, evaluate the definite integral.

36. $\int_1^4 \frac{3}{1-2x} dx.$

37. $\int_{-1}^0 \frac{x}{x^2+5} dx.$

38. $\int_1^4 \frac{1}{\sqrt{x}(1+\sqrt{x})} dx.$

In Exercises 39–42, use the method shown in Example 2 to help perform the indicated differentiation.

39. $\frac{d}{dx} \left[\ln \frac{\cos x}{\sqrt{4-3x^2}} \right].$

40. $\frac{d}{dx} \left[\ln \sqrt{\frac{x-1}{x+1}} \right].$

41. $\frac{d}{dx} [\ln (\sqrt{x} \sqrt[3]{x+3} \sqrt[5]{3x-2})].$

42. $\frac{d}{dx} \left[\ln \left(\frac{\sqrt{x} \sqrt[3]{x+1}}{\sin x \sec x} \right) \right].$

In Exercises 43–46, obtain dy/dx by logarithmic differentiation.

43. $y = x \sqrt[3]{1+x^2}.$

44. $y = \sqrt[5]{\frac{x-1}{x+1}}.$

45. $y = \frac{(x^2-8)^{1/3} \sqrt{x^3+1}}{x^6-7x+5}.$

46. $y = \frac{\sin x \cos x \tan^3 x}{\sqrt{x}}.$

47. Find

(a) $\frac{d}{dx} [\log_x e]$

(b) $\frac{d}{dx} [\log_x 2].$

In Exercises 51 and 52, use Formula (5) or (7) to find the limit.

51. Find $\lim_{x \rightarrow 0} (1-2x)^{1/x}$. [Hint: Let $t = -2x$.]

52. Find $\lim_{x \rightarrow +\infty} (1+3/x)^x$. [Hint: Let $t = 3/x$.]