

WORKSHEET # 11

LESSON # 69 Derivatives & Integrals of Logarithmic/Exp. Func

Row# _____

Name _____

Period _____

Pg. 367

98. $\int \frac{dx}{e^x}$

99. $\int e^{-5x} dx$

100. $\int e^{\tan x} \sec^2 x dx$

101. $\int e^{\sin x} \cos x dx$

102. $\int x^3 e^{x^4} dx$

103. $\int x^2 e^{-2x^3} dx$

104. $\int \frac{e^x + e^{-x}}{e^x - e^{-x}} dx$

105. $\int \frac{e^x}{1 + e^x} dx$

106. $\int \sqrt{e^x} dx$

107. $\int e^{2t} \sqrt{1 + e^{2t}} dt$

108. $\int (x + 3) \exp(x^2 + 6x) dx$

109. $\int \sin x \exp(\cos x) dx$

110. $\int e^x \sin(1 + e^x) dx$

111. $\int e^{-x} \sec^2(2 - e^{-x}) dx$

112. $\int 2^{5x} dx$

113. $\int \pi^{\sin x} \cos x dx$

114. $\int [ex^2 + (\frac{1}{2} \ln 2) \sin x] dx$

115. $\int (x \ln 3 - 4\pi e^2 \cos x) dx$

116. $\int e^{2 \ln x} dx$

117. $\int \{\ln(e^x) + \ln(e^{-x})\} dx$

118. $\int \frac{dy}{\sqrt{y} e^{\sqrt{y}}}$

119. $\int \frac{e^{\sqrt{y}}}{\sqrt{y}} dy$

120. $\int_0^{\ln 2} e^{-3x} dx$

121. $\int_0^{\ln 5} e^x(3 - 4e^x) dx$

122. $\int_1^{\sqrt{2}} x 4^{-x^2} dx$

123. $\int_1^2 (3 - e^x) dx$

124. $\int_0^e \frac{dx}{x + e}$

125. $\int_{-\ln 3}^{\ln 3} \frac{e^x}{e^x + 4} dx$

 129. Find the intersections of the curves $y = 2^x$ and $y = 3^{x+1}$.

 130. Find a point on the graph of $y = e^{3x}$ at which the tangent line passes through the origin.

 131. Find $f'(x)$ if $f(x) = x^e$.

 137. Find the maximum value of $x^3 e^{-2x}$.

 138. Prove: $e^x \geq 1 + x$. [Hint: Show that $1 + x - e^x \leq 0$.]

 139. Find the area of the region enclosed by $y = e^x$, $y = 3$, and $x = 0$.

Answers to worksheet #11

$$99. \frac{-1}{5} e^{-5x} + C$$

$$119. 2e^{7y} + C$$

$$101. e^{\sin x} + C$$

$$121. -36$$

$$103. \frac{-1}{6} e^{-2x^3} + C$$

$$123. -e^2 + e + 3$$

$$125. \ln\left(\frac{21}{13}\right)$$

$$105. \ln(1 + e^x) + C$$

$$107. \frac{1}{3} (1 + e^{2t})^{3/2} + C$$

$$109. -e^{\cos x} + C$$

$$137. \frac{27}{8} e^{-3}$$

$$111. \tan(2 - e^{-x}) + C$$

$$113. \frac{\pi^{\sin x}}{\ln \pi} + C$$

$$2 \ln 3 - 2$$

$$115. \frac{1}{2} x^2 \ln 3 - 4\pi e^2 \sin x + C$$

$$117. C$$