

Ch. 13 - BOARD PROBLEMS

FIND $f'(x)$

① $f(x) = (1 - \tan(2x))(\sec(2x))$

② FIND $f''(x)$. WHERE IS $f''=0$ BETWEEN $[0, 2\pi]$

$$f(x) = 2\sin x + 3x$$

③ FIND $\frac{dy}{dx}$

$$y = \frac{2x^2}{\sqrt{3x-4}}$$

④ FIND THE INVERSE. $f(x) = \frac{3xy-1}{4x+2}$

Ch. 13 - Derivatives of $y = e^x$, $y = \ln x$

$$\text{If } y = e^x, \quad y' = e^x$$

$$y = e^u, \quad y' = e^u \cdot du$$

$$\boxed{\text{Ex. 1}} \quad y = e^{3x}$$

$$y' =$$

$$\boxed{\text{Ex. 2}} \quad y = 2e^{(1-x)} - e^{4x}$$

$$\boxed{\text{Ex. 3}} \quad y = x^2 \cdot e^x$$

$$\boxed{\text{Ex. 4}} \quad y = e^{\sin(2x)}$$

$$\boxed{\text{Ex. 5}} \quad y = \frac{4x}{e^{2x}}$$

IF $y = \ln x$, $y' = \frac{1}{x}$

IF $y = \ln u$, $y' = \frac{1}{u} \cdot \frac{du}{dx}$

EX. 6 FIND y' , WHERE $y = \ln(3x)$

EX. 7 FIND $f'(x)$, WHERE $f(x) = \ln(x^2 + 1)$

EX. 8 FIND y' , WHERE $y = \ln(\sin x)$

EX. 9 FIND y' , WHERE $y = \ln(x^2) + \ln(1-x)$

EX. 10 FIND y' , WHERE $y = \frac{\ln(2x)}{x^2}$

LESSON PRACTICE

13A

Find $f'(x)$.

1. $f(x) = 4e^x$

2. $f(x) = e^{\sqrt{x}}$

3. $f(x) = e^{3x^2}$

4. $f(x) = \frac{4}{e^x}$

5. $f(x) = e^x \cdot \sin(x)$

6. $f(x) = \ln(4x^2)$

7. $f(x) = \ln(\sqrt{x})$

8. $f(x) = (\ln(5x))^5$

9. $f(x) = (1 - e^{2x})^2$

10. $f(x) = e^{-x} \sin(x)$

11. $f(x) = e^{2x} \ln(2x)$

12. $f(x) = \cos(\ln(3x))$