

Derivatives of Inverse Functions

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the derivative of y with respect to x .

1) $y = 3 \sin^{-1}(5x^4)$ 1) _____

- A) $\frac{60x^3}{\sqrt{1-25x^8}}$ B) $\frac{60x^3}{\sqrt{1-25x^4}}$ C) $\frac{60x^3}{1-25x^8}$ D) $\frac{3}{\sqrt{1-25x^8}}$

2) $y = \cos^{-1}(5x^2 - 4)$ 2) _____

- A) $\frac{10x}{1+(5x^2-4)^2}$ B) $\frac{10x}{\sqrt{1-(5x^2-4)^2}}$
C) $\frac{5}{\sqrt{1+(5x^2-4)^2}}$ D) $\frac{-10x}{\sqrt{1-(5x^2-4)^2}}$

3) $y = \tan^{-1} \frac{4x}{5}$ 3) _____

- A) $\frac{-20}{16x^2+25}$ B) $\frac{20}{16x^2+25}$ C) $\frac{4}{\sqrt{25-16x^2}}$ D) $\frac{25}{16x^2+25}$

4) $y = 4x^3 \sin^{-1} x$ 4) _____

- A) $\frac{4x^3}{\sqrt{1-x^2}}$ B) $\frac{4x^3}{1+x^2} + 12x^2 \sin^{-1} x$
C) $\frac{1}{\sqrt{1-x^2}} + 12x^2$ D) $\frac{4x^3}{\sqrt{1-x^2}} + 12x^2 \sin^{-1} x$

5) $y = -\cot^{-1} \frac{8x}{7}$ 5) _____

- A) $\frac{-56}{64x^2+49}$ B) $\frac{49}{64x^2+49}$ C) $\frac{56}{64x^2+49}$ D) $\frac{8}{\sqrt{49-64x^2}}$

6) $y = -\csc^{-1} \left(\frac{8x+9}{3} \right)$ 6) _____

- A) $\frac{24}{(8x+9)\sqrt{(8x+9)^2-9}}$ B) $\frac{24}{\sqrt{(8x+9)^2-9}}$
C) $\frac{-24}{(8x+9)\sqrt{(8x+9)^2-1}}$ D) $\frac{-24}{1+(8x+9)^2}$

Answer Key

Testname: DERIVATIVES OF INVERSE FUNCTIONS

- 1) A
- 2) D
- 3) B
- 4) D
- 5) C
- 6) A