

4.3. Derivatives of the Inverse Trig Functions

Section 4.3 Exercises, pg. 178

1, 5, 6, 7, 15, 17, 18, 21

4.4. Derivatives of Exponential Functions

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7, 8, 9, 11, 12, 13, 33, 34, 55(c)¹*4.4. Derivatives of Logarithmic Functions*

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15, 16, 17, 21, 24, 26

Supplemental Problems:

1*4.4. Derivatives Involving Absolute Values*

Supplemental Problems:

2, 3*4.4. Logarithmic Differentiation*

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43, 44, 47

Supplemental Problems:

4**Notes****1.** Just use

$$\frac{d2^x}{dx} = \lim_{h \rightarrow 0} \frac{2^{x+h} - 2^x}{h}$$

to evaluate the limit.

Supplementary Problems

- 1)** The hyperbolic sine and cosine functions are defined by

$$\sinh x = \frac{1}{2}(e^x - e^{-x})$$

and

$$\cosh x = \frac{1}{2}(e^x + e^{-x}).$$

Show that

a)

$$\frac{d \sinh x}{dx} = \cosh x$$

b)

$$\frac{d \cosh x}{dx} = \sinh x$$

- 2)** Calculate $f'(x)$ for

a) $f(x) = \ln|\sec x|$

b) $f(x) = \ln|\csc x - \cot x|$

- 3)** Calculate $f'(x)$ for

$$f(x) = \frac{3x^2 - 5x - 2}{|x - 2|}.$$

- 4)** Calculate $f'(x)$ for

a)

$$f(x) = x^{2x}$$

b)

$$f(x) = (4x)^{3x}$$