10. [5 points] Shown on the axes below are the graphs of \( y = f(x) \), \( y = f'(x) \), and \( y = f''(x) \).

Determine which graph is which and circle the \textbf{ONE} correct response below.

i. \( f(x): I, f'(x): II, \) and \( f''(x): III \)

ii. \( f(x): I, f'(x): III, \) and \( f''(x): II \)

iii. \( f(x): II, f'(x): I, \) and \( f''(x): III \)

iv. \( f(x): II, f'(x): III, \) and \( f''(x): I \)

v. \( f(x): III, f'(x): I, \) and \( f''(x): II \)

vi. \( f(x): III, f'(x): II, \) and \( f''(x): I \)

11. [4 points] Suppose \( w \) and \( r \) are continuous functions on \((-\infty, \infty)\), \( W(x) \) is an invertible antiderivative of \( w(x) \), and \( R(x) \) is an antiderivative of \( r(x) \).

Circle all of the statements I-VI below that must be true. If none of the statements must be true, circle NONE OF THESE.

I. \( W(x) + R(x) + 2 \) is an antiderivative of \( w(x) + r(x) \).

II. \( W(x) + R(x) \) is an antiderivative of \( w(x) + r(x) + 2 \).

III. \( \cos(W(x)) \) is an antiderivative of \( \sin(w(x)) \).

IV. \( e^{W(x)} \) is an antiderivative of \( w(x)e^{w(x)} \).

V. \( e^{R(x)} \) is an antiderivative of \( r(x)e^{R(x)} \).

VI. If \( w \) is never zero, then \( W^{-1}(R(x)) \) is an antiderivative of \( \frac{r(x)}{w(W^{-1}(R(x)))} \).

\[ \frac{d}{dx} \left( W^{-1}(R(x)) \right) = R'(x) \frac{1}{W'(W^{-1}(R(x))))} = \frac{r(x)}{w(W^{-1}(R(x)))}. \]

Solution: To see that VI is true, we check that

VII. NONE OF THESE