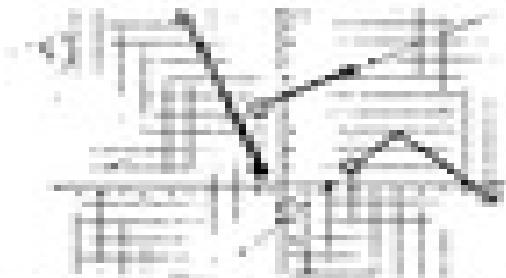


Pre-Calculus Chapter - Derivatives

Version 2.0



2a) $f(0) = (0, 1)$ 2b) $f'(0) = \infty$, vertical tangent - stationary

2c) $f''(0) = (0, 1)$, inflection point

2d) two different, increasing points:
 $f(x) = x^2 + x + 1$, $(0, 1)$

2e) $f'(x) = 2x^2 + 3x^2 + 4x + 1 = 0$

$$(f+g)'(x) = \frac{dx}{dx}$$

$$(x+1)'(x) = 2x^2 + 3x + 4$$

4) $(f \cdot g)(x) = x^2 \cdot x^2 + x^2 \cdot 3x^2 + x^2$

$$(f \cdot g)'(x) = \frac{dx^2}{dx} \cdot x^2 + x^2 \cdot \frac{dx^2}{dx}$$

$$(x+1)'(x) = -x^2 + 3x^2 + x$$

5a) $f'(x) = 2x$

$$f'(2-x) = 2(2-x)^2 + 3(2-x) + 4$$

5b) $f'(y) = 2y$

$$f'(2-y) = 2(2-y)^2 + 3(2-y) + 4$$

$$f'(2-y) = -y$$

5c) $f'(2x) = 2x^2 + 3x^2 + 4x$

$$f'(2x)'(x) = 2x^2 + 3x^2 + 4x + 2x^2$$

$$f'(2x)'(x) = 7x^2 + 8x + 4$$

6a) $f(g(x)) = x^2 + 3x + 2$

$$g(f(x)) = x^2 + 3x + 2$$

$$f(g(x)) = x$$

6b) $f(g(x)) = \frac{x^2 + 3x + 2}{x+2}$ for $x \neq -2$

6c) $f(g(x)) = \frac{x}{x+2}$ for $x \neq 0$

Answers
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