October 2, 2015

Exam #2

$f(x) = 2x^2 - 6x$

$\frac{f(x+h) - f(x)}{h}$

$\frac{2(x+h)^2 - 6(x+h) - (2x^2 - 6x)}{h}$

$\frac{2(x^2 + 2xh + h^2) - 6x - 6h - 2x^2 + 6x}{h}$

$\frac{2x^2 + 4xh + 2h^2 - 6x - 6h - 2x^2 + 6x}{h}$

$\frac{4xh + 2h^2 - 6h}{h}$

$\frac{h(4x + 2h - 6)}{h}$

$4x + 2h - 6$

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$f(x) = 2x^2 - 6x$

$0 = 2x^2 - 6x$

$0 = x(2x - 6)$

① $x = 0$

② $2x - 6 = 0$

$2x = 6$

$x = 3$

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$f(x) = 2x^2 + 6$

$f(1-a) = 2(1-a)^2 + 6$

$= 2(1 - 2a + a^2) + 6$

$= 2 - 4a + 2a^2 + 6$

$= 8 - 4a + 2a^2$

$= 2a^2 - 4a + 8$

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a.) $f(x) = x^3 - 2x^2 + 1$

$D: (-\infty, \infty)$

b.) $f(x) = \frac{2x}{x^2 - 9}$

$x^2 - 9 = 0$

$x = \pm 3$

$D: (-\infty, -3) \cup (-3, 3) \cup (3, \infty)$

c.) $f(x) = \sqrt{x+2} \geq 0$

$x \geq -2$

$D: [-2, \infty)$

$f(x) = \begin{cases} -x - 1 & ; x \leq 0 \\ x & 0 < x < 1 \\ (x-2)^2 & x \geq 1 \end{cases}$

$f(4) = (4-2)^2$

$= (2)^2$

$= 4$

$f(-\frac{1}{2}) = -(-\frac{1}{2}) - 1$

$= \frac{1}{2} - 1$

$= \frac{1 - 2}{2}$

$= -\frac{1}{2}$

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$R = \{(8, 11), (34, 22), (6, 17), (4, 22)\}$

$x \neq 8$ or 6

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