MA 341 – Review Assignment 1 (answer key)

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## Question 1
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(a) $y' = x^2 f'(x) + f(x)(2x)$

(b) $y' = \dfrac{xf'(x) - 2f(x)}{x^3}$

(c) $y' = \dfrac{f(x)(2x) - x^2 f'(x)}{(f(x))^2}$

(d) $y' = \dfrac{xf(x) + 2x^2 f'(x) - 1}{2x^{3/2}}$

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## Question 2
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$\left( -2 - \sqrt{2}, \; -2 + \sqrt{2} \right)$

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## Question 3
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$y'(x) = -e^{-7x}(3\sin 3x + 7\cos 3x)$

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## Question 4
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$y'(x) = 12 \, \tan 6x \, \sec^2 6x$

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## Question 5
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$\dfrac{dy}{dx} = \dfrac{2xy(e^{x^2} - y^2)}{5y^4 + 3x^2 y^2 - e^{x^2}}$

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## Question 6
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$h'(x) = \dfrac{1}{\sqrt{x^2 - 1}}$

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## Question 7
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$L(x) = \dfrac{1}{12}x - \dfrac{4}{3}$

## Question 8

$$-\frac{1}{40}\left(1-x^4\right)^{10}+C$$

## Question 9

$$\theta\sin\theta+\cos\theta+C$$

## Question 10

(a) $\dfrac{A}{x}+\dfrac{B}{x^2}+\dfrac{C}{x+1}$

(b) $\dfrac{A}{x}+\dfrac{Bx+C}{x^2+1}$