

### Answer on Question#54571, Math, Differential Equations

1.  $f'(x) = \frac{(-2)(2+3x+3x^2)-(3+6x)(4-2x)}{(2+3x+3x^2)^2} = \frac{6x^2-24x-16}{(2+3x+3x^2)^2} = 0$ . Solving the quadratic equation in the numerator, obtain  $x_{1,2} = \frac{2}{3}(3 \pm \sqrt{15})$ . These are the values for which  $f'(x) = 0$ .

$$2. y = \left(x + (\sqrt{x})^2 - 1\right)^m = (2x - 1)^m.$$

$$\frac{dy}{dx} = m(2x - 1)^{-1+m}(2) = 2m[2x - 1]^{m-1}, \text{ therefore}$$

$$(x^2 - 1) \left(\frac{dy}{dx}\right)^2 - m^2 y^2 = 4m^2(x^2 - 1)(2x - 1)^{2m-2} - m^2(2x - 1)^{2m} = \\ = m^2(2x - 1)^{2m-2}[4x^2 - 4 - (2x - 1)^2] = m^2(2x - 1)^{2m-2}[-5 + 4x].$$

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