

Worksheet #24

Answers

$$1) \begin{array}{r|rrrr} 2/3 & 48 & -80 & 41 & -6 \\ & & 32 & -32 & 6 \\ \hline & 48 & -48 & 9 & \underline{0} \end{array} \quad \begin{array}{l} 48x^2 - 48x + 9 = 0 \\ (12x - 3)(4x - 3) = 0 \\ x = \{2/3, 1/4, 3/4\} \end{array}$$

2) positive: 4 variations = 4 or 2 or 0 positive real roots

$$f(-x) = 2x^4 + x^3 + 6x^2 + x + 5$$

negative: 0 variations = 0 negative real roots

3) positive: 3 variations = 3 or 1 positive real roots

$$f(-x) = 3x^4 - 5x^3 - 6x^2 - 8x - 3$$

negative: 1 variation = 1 negative real root

4) positive: 2 variations = 2 or 0 positive real roots

$$g(-x) = -4x^3 + 5x + 8$$

negative: 1 variation = 1 negative real root

5) positive: 1 variation = 1 positive real root

$$g(-x) = -2x^3 - 4x^2 - 5$$

negative: 0 variations = 0 negative real roots

6) positive: 1 variation = 1 positive real root

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

negative: 2 variations = 2 or 0 negative real roots

7) positive: 3 variations = 3 or 1 positive real roots

$$f(-x) = 3x^3 + 20x^2 + 36x + 16$$

negative: 0 variations = 0 negative real roots

8) positive: 3 variations = 3 or 1 positive real roots

$$f(-x) = -2x^4 - 13x^3 - 21x^2 - 2x + 8$$

negative: 1 variation = 1 negative real root