

$$f(x) = x^7 - 6x^5 + 8x^3$$

Find the zeroes of f:

$$x^7 - 6x^5 + 8x^3 = 0$$

$$x^3(x-2)(x+2)(x^2-2) = 0$$

$$\text{soln}(s) := 0, 0, 0, -2, 2, \sqrt{2}, -\sqrt{2}$$

$$\text{approx_soln}(s) := -2.000, -1.414, 0., 0., 0., 1.414, 2.000$$

Determine the end behavior of f:

Down_Up

Find the tangent slope function for f:

$$f(x) = x^7 - 6x^5 + 8x^3$$

$$\text{tsf}(x) = 7x^6 - 30x^4 + 24x^2$$

Find the zeroes of the tsf function:

$$\text{tsf}(x) = 0$$

$$7x^6 - 30x^4 + 24x^2 = 0$$

$$x^2(7x^4 - 30x^2 + 24) = 0$$

$$\text{soln}(s) := 0, 0, -\frac{\sqrt{105+7\sqrt{57}}}{7}, \frac{\sqrt{105+7\sqrt{57}}}{7}, -\frac{\sqrt{105-7\sqrt{57}}}{7}, \frac{\sqrt{105-7\sqrt{57}}}{7}$$

$$\text{approx_soln}(s) := -1.795, -1.032, 0., 0., 1.032, 1.795$$

Use the information above to sketch the graph of f and to fill in the information below.

$$x - \text{intercept}(s), \quad x = -2.0, -1.141, 0, 1.141, -2.0$$

$$x - \text{coordinate}(s) \text{ of bump}(s) \text{ on } f, \quad x = -1.795, -1.032, 0, 1.032, 1.795$$

$$\text{bump1 on } f = [-1.795, 5.49], \text{ bump2 on } f = [-1.032, -3.013], \text{ bump3 on } f = [0, 0]$$

$$\text{bump4 on } f = [1.032, 3.013], \text{ bump5 on } f = [1.795, -5.49]$$

