

$$6.) \quad f(x) = x^3 + bx^2 + cx + d$$

$$0 = -1 + b - c + d$$

$$0 = -8 + 4b - 2c + d$$

$$0 = 64 + 16b + 4c + d$$

$$P_1(-1/0)$$

$$P_2(-2/0)$$

$$P_3(4/0)$$

$$b = -1 \quad c = -10 \quad d = -8$$

$$f(x) = x^3 - x^2 - 10x - 8$$

$$E_1(-1,52 \mid 1,38) \quad (\text{Max}) \quad E_2(2,19 \mid -24,2) \quad (\text{Min})$$

$$W\left(\frac{1}{3} \mid -11\frac{11}{27}\right)$$

$$f'\left(\frac{1}{3}\right) = -10\frac{1}{3}$$

$$-11\frac{11}{27} = -3\frac{4}{9} + n \quad n = -7\frac{26}{27}$$

$$t: \quad y = -10\frac{1}{3}x - 7\frac{26}{27}$$

$$7.) \quad f(x) = ax^3 + bx^2 + cx + d$$

$$f'(x) = 3ax^2 + 2bx + c$$

$$f''(x) = 6ax + 2b$$

$$P(0/0)$$

$$f''(0) = 0$$

$$f'(-3) = 0$$

$$f'(0) = -1$$

$$0 = \quad \quad \quad d$$

$$0 = \quad \quad 2b$$

$$0 = 27a - 6b + c$$

$$-1 = \quad \quad \quad c$$

$$a = \frac{1}{27} \quad b = 0 \quad c = -1 \quad d = 0$$

$$f(x) = \frac{1}{27}x^3 - x$$

$$0 = x\left(\frac{1}{27}x^2 - 1\right) \quad x_1 = 0 \quad x_2 = 3\sqrt[3]{1} \quad x_3 = -3\sqrt[3]{1}$$

$$t_1: \quad y = -x$$

$$t_2: \quad y = 2x - 10,3923$$

$$t_3: \quad y = 2x + 10,3923$$

$$8.) f(x) = 0,3x^2 - 1,2x$$

$$F(x) = 0,1x^3 - 0,6x^2 + c$$

$$0 = -0,8 - 2,4 + c$$

$$P(-2/0)$$

$$c = 3,2$$

$$F(x) = 0,1x^3 - 0,6x^2 + 3,2$$

$$a.) \text{ Max } (0/3,2)$$

$$\text{Min } (4/0)$$

$$W(2/1,6)$$

$$b.) m = -1,2$$

$$1,6 = -2,4 + n \quad n = 4$$

$$\underline{y = -1,2x + 4}$$

$$c.) g: m = \frac{1,6}{4} = 0,4$$

$$0 = -0,8 + n \quad n = 0,8$$

$$\underline{y = 0,4x + 0,8}$$

$$0,4 = 0,3x^2 - 1,2x$$

$$x_1 = -0,31$$

$$x_2 = 4,31$$

$$\underline{P_1(-0,31/3,14)} \quad \underline{P_2(4,31/0,06)}$$

$$9.) f(x) = \frac{1}{4}x^3 + bx + c$$

$$P(-2/3)$$

$$f'(-2) = 7$$

$$3 = -2 - 2b + c$$

$$1 = 3 + b$$

$$b = -2 \quad c = 1$$

$$\underline{f(x) = \frac{1}{4}x^3 - 2x + 1}$$

$$10.) f'_a(x) = \frac{1}{2}(4x^3 - 2ax)$$

$$f''_a(x) = \frac{1}{2}(12x^2 - 2a)$$

$$0 = 12 - 2a$$

$$a = 6$$

$$\underline{f_6(x) = \frac{1}{2}(x^4 - 6x^2)}$$