

Selbsttest Parabeln aus Punkten

Aufgabe: Gegeben sind drei Punkte. Bestimmen Sie

1) die dazugehörige Parabelgleichung

2) ihre Schnittstellen mit den Achsen

3) ihren Scheitelpunkt

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|----------------------------|------------------------|------------------------|
| a) $P_1 = (2; 199,875);$ | $P_2 = (-4; 76,875);$ | $P_3 = (9; -29,725);$ |
| b) $P_1 = (9; -34,32);$ | $P_2 = (-9; 28,86);$ | $P_3 = (-7; -102,96);$ |
| c) $P_1 = (-6; -639,84);$ | $P_2 = (5; 35,34);$ | $P_3 = (-2; -220,72);$ |
| d) $P_1 = (9; 18,327);$ | $P_2 = (0; -210,453);$ | $P_3 = (6; -131,733);$ |
| e) $P_1 = (5; 73,08);$ | $P_2 = (1; -20,52);$ | $P_3 = (-8; 470,88);$ |
| f) $P_1 = (-9; -142,071);$ | $P_2 = (8; -866,271);$ | $P_3 = (0; -14,271);$ |
| g) $P_1 = (3; -329,427);$ | $P_2 = (4; -427,707);$ | $P_3 = (8; -946,827);$ |

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Lösungen:

- a) $P_1 = (2; 199,875);$ $P_2 = (-4; 76,875);$ $P_3 = (9; -29,725);$
L: $y = f(x) = -4,1x^2 + 12,3x + 191,675$
 $y_s = 191,675$
 $x_1 = -5,5; x_2 = 8,5;$
 $S = (1,5; 200,9);$
- b) $P_1 = (9; -34,32);$ $P_2 = (-9; 28,86);$ $P_3 = (-7; -102,96);$
L: $y = f(x) = 3,9x^2 - 3,51x - 318,63$
 $y_s = -318,63$
 $x_1 = -8,6; x_2 = 9,5;$
 $S = (0,45; -319,4198);$
- c) $P_1 = (-6; -639,84);$ $P_2 = (5; 35,34);$ $P_3 = (-2; -220,72);$
L: $y = f(x) = -6,2x^2 + 55,18x - 85,56$
 $y_s = -85,56$
 $x_1 = 2; x_2 = 6,9;$
 $S = (4,45; 37,2155);$
- d) $P_1 = (9; 18,327);$ $P_2 = (0; -210,453);$ $P_3 = (6; -131,733);$
L: $y = f(x) = 4,1x^2 - 11,48x - 210,453$
 $y_s = -210,453$
 $x_1 = 8,7; x_2 = -5,9;$
 $S = (1,4; -218,489);$
- e) $P_1 = (5; 73,08);$ $P_2 = (1; -20,52);$ $P_3 = (-8; 470,88);$
L: $y = f(x) = 6x^2 - 12,6x - 13,92$
 $y_s = -13,92$
 $x_1 = 2,9; x_2 = -0,8;$
 $S = (1,05; -20,535);$
- f) $P_1 = (-9; -142,071);$ $P_2 = (8; -866,271);$ $P_3 = (0; -14,271);$
L: $y = f(x) = -7,1x^2 - 49,7x - 14,271$
 $y_s = -14,271$
 $x_1 = -6,7; x_2 = -0,3;$
 $S = (-3,5; 72,704);$
- g) $P_1 = (3; -329,427);$ $P_2 = (4; -427,707);$ $P_3 = (8; -946,827);$
L: $y = f(x) = -6,3x^2 - 54,18x - 110,187$
 $y_s = -110,187$
 $x_1 = -5,3; x_2 = -3,3;$
 $S = (-4,3; 6,3);$